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I. STATUS OF CLAIMS

Claims 1-180 were pending at the time the Office Action was mailed on April 2, 2009.

The information disclosure statement filed September 17, 2008 is objected to for failing to comply with the provisions of 37 CFR 1.98 and MPEP §609 because some of the documents listed under section U.S. Patent Application Documents are not identified by a U.S. Patent Application Publication Number.

The Specification is objected under 37 CFR 1.75(d)(1) for failing to provide a clear support or antecedent basis in the description for amended claims.

Claims 108-128 and 154-178 stand rejected under 35 USC §112, ¶1 as failing to comply with the written description requirement.

Claims 1-5, 8, 9, 11-12, 14, 16, 19-21, 23, 25, 31-39, 42-46, 48, 50-53, 56-57, 59-60, 62, 64, 67-69, 71, 73, 79-87, 90-94, 96, 98-101, 104, 105, 108-112, 114-117, 119-122, 125-126, 129-131, 133, 135, 137-138, 140, 142, 144-147, 150-151, 154-156, 158, 160, 162-163, 165, 167, 169-172, 175, and 176 stand rejected under 35 USC §103(a) as being unpatentable over Mulgund in view of Bennett (US 5615367) and in further view of "The Design of an Acquisitional Query Processor For Sensor Networks" by Samuel Madden et al. (Madden I).

Claims 6-7 and 54-55 stand rejected under 35 USC §103(a) as being unpatentable over Mulgund in view of Bennett, and further in view of Chiloyan (US 7165109).

Claims 10, 13, 15, 17-18, 22, 24, 40-41, 49, 58, 61, 63, 65-66, 70, 72, 88-89, 97, 113, 118, 132, 134, 136, 139, 141, 143, 157, 159, 161, 164, 166, and 168 stand rejected under 35 USC §103(a) as being unpatentable over Mulgund in view of Bennett, in view of Madden I and further in view of Kung (US 2005/0021724).

Claims 26 and 74 stand rejected under 35 USC §103(a) as being unpatentable over Mulgund in view of Bennett, and further in view of Madden I, and further in view of Chiloyan (US Patent No.: 7,165,109).

Claims 27-30 and 75-78 stand rejected under 35 USC §103(a) as being unpatentable over Mulgund in view of Bennett, and further in view of Madden I, and further in view of Godlewski (US 6421354).

Claims 47 and 95 stand rejected under 35 USC §103(a) as being unpatentable over Mulgund in view of Bennett, and further in view of Regli (US 2005/0141706).

Claims 102-103, 106, 123-124, 127, 148-149, 152, 173-174, and 177 stand rejected under 35 USC §103(a) as being unpatentable over Mulgund in view of Bennett, in view of Madden I and further in view of Nelson (US 2004/0122849).

Claims 107, 128, 153, and 178 stand rejected under 35 USC §103(a) as being unpatentable over Mulgund in view of Bennett, in view of Madden I and further in view of Madden "TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks" (Madden II).

Claims 179 and 180 stand rejected under 35 USC §103(a) as being unpatentable over Madden I in view of Mulgund.

II. ISSUES TO BE REVIEWED

The issues in this response relate to whether the art of record establishes a *prima facie* case of the unpatentability of Applicant's claims. For reasons set forth elsewhere herein, Applicant respectfully asserts that the art of record does not establish a *prima facie* case of the unpatentability of any pending claim.[1] Accordingly, Applicant respectfully requests that Examiner hold all pending claims allowable for at least the reasons described herein, and issue a Notice of Allowance on same.

[1] Irrespective of a desire to be cooperative, the ability of any patent practitioner to help the Examiner fulfill this burden on the record is tightly curtailed by pre- and post-issuance legal standards and by various ethical duties in tension. *See, e.g.*, 37 C.F.R. § 10.83 ("A practitioner should represent a client zealously within the bounds of the law."); 37 C.F.R. § 10.84 ("[A] practitioner shall not intentionally ... [p]rejudice or damage a client during the course of a professional relationship, except as required under this [ethics] part."); and 37 C.F.R. § 10.76 ("A practitioner should represent a client competently."). For these and other reasons, this document notes instances in which the Examiner inadvertently did not follow the prescribed rules rather than seeking to interpret claims and/or to adduce evidence on the Examiner's behalf.

III. OBJECTION TO INFORMATION DISCLOSURE STATEMENT

The Examiner objected to the information disclosure statement filed September 17, 2008 fails to comply with the provisions of 37 CFR 1.98 and MPEP §609 because some of the documents listed under section U.S. Patent Application Documents are not identified by a U.S. Patent Application Publication Number. Applicant regrets any inconvenience caused by this omission, and will submit a corrected information disclosure statement for the Examiner's consideration in due course.

IV. OBJECTION TO SPECIFICATION

The Examiner objected to the Specification 37 CFR 1.75(d)(1) for failing to provide a clear support or antecedent basis in the description for amended claims. Applicant has amended the claims to be supported by the specification. Accordingly, Applicant respectfully requests reconsideration and withdrawal of the objection to the Specification.

V. REJECTIONS OF CLAIMS 108-128 AND 154-178 UNDER §112, ¶1 DUE TO FAILING TO COMPLY WITH THE WRITTEN DESCRIPTION REQUIREMENT

The Examiner rejected claims 108-128 and 154-178 stand rejected under 35 USC §112, ¶1 as failing to comply with the written description requirement. More specifically, the Examiner rejected these claims for containing "subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors. at the time the application was filed, had possession of the claimed invention." (Office Action mailed 2 April, 2009, p. 5).

Applicant has amended claim 108 to recite:

108. A system comprising:

means for creating a plurality of first-administered content indexes for a first set of motes;

means for aggregating the plurality of first-administered content indexes of the first set of motes into an aggregated content index using a gateway mote included within the first set of motes;

means for creating one or more second-administered content indexes for a second set of motes;

means for obtaining at least a part of the second-administered content indexes of the second set of motes; and

means for creating a federated index from the aggregated content index aggregated by the gateway mote and at least a part of the one or more second-administered content indexes, wherein at least one of the means for creating or the means for obtaining includes at least one of hardware, firmware, or a processor configured to perform particular functions including at least one of obtaining or creating.(Emphasis Added)

Applicant has amended claim 154 to recite:

154. A system comprising:

means for aggregating a plurality of a first-administered content index from a first set of motes into an aggregated content index using an aggregating mote from among the first set of motes;

means for receiving at least a part of a second-administered content index from a second set of motes; and

means for creating a federated index from the aggregated content index from the aggregating mote and at least a part of the second-administered content index, wherein at least one of the means for obtaining or the means for creating includes at least one of hardware, firmware, or a processor configured to perform particular functions including at least one of obtaining or creating. (emphasis added).

As described in Applicant's disclosure, in some implementations, "hardware, firmware, or a processor configured to perform particular functions including at least one of obtaining or creating. (See Specification paragraphs 10, 12, 33, 109, 110-112).

For example, Applicant's specification describes:

"In one or more various aspects, related systems include but are not limited to circuitry and/or programming for effecting the herein-referenced method aspects; the circuitry and/or programming can be virtually any combination of hardware, software, and/or firmware configured to effect the herein-referenced method aspects depending upon the design choices of the system designer"

For the foregoing reasons, Applicant respectfully submits that amended claims 108 and 154 (and their dependent claims) contain subject matter which was described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of

the claimed invention, and respectfully requests reconsideration and withdrawal of the rejections of claims 108-128 and claims 154-178 under 35 USC §112, ¶1.

VI. ARGUMENT: ART OF RECORD DOES NOT ESTABLISH *PRIMA FACIE* CASE OF UNPATENTABILITY IN VIEW OF CITED ART OF RECORD

Applicant respectfully asserts herein that, under the MPEP and legal standards for patentability as set forth below, the art of record does not establish a *prima facie* case of the unpatentability of Applicant's claims at issue. Specifically, Applicant respectfully shows below that the art of record does not recite the text of Applicant's claims at issue, and hence fails to establish a *prima facie* case of unpatentability. Accordingly, Applicant respectfully requests that the Examiner withdraw his rejections and hold claims 47-84 to be allowable over the art of record.

A. MPEP Standards for Patentability[2]

The MPEP states as follows: "the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability. If that burden is met, the burden of coming forward with evidence or argument shifts to the applicant. . . If examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent." *MPEP* § 2107 (citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992)); *In Re Glaug* 283 F.3d 1335, 62 USPQ2d 1151 (Fed. Cir. 2002) ("During patent examination the PTO bears the initial burden of presenting a *prima facie* case of unpatentability. *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992); *In re Piasecki*, 745 F.2d 1468, 1472, 223 U.S.P.Q. 785, 788 (Fed. Cir. 1984). If the PTO fails to meet this burden, then the applicant is entitled to the patent."). Accordingly, unless and until an examiner presents evidence establishing *prima facie*

[2] Applicant is aware that Examiner is familiar with the MPEP standards. Applicant is merely setting forth the MPEP standards to serve as a framework for Applicant's arguments following and to ensure a complete written record is established. Should Examiner disagree with Applicant's characterization of the MPEP standards, Applicant respectfully requests correction.

unpatentability, an applicant is entitled to a patent on all claims presented for examination.

1. MPEP Standards for Determining Anticipation

An examiner bears the initial burden of factually supporting any *prima facie* conclusion of anticipation. *Ex Parte Skinner*, 2 U.S.P.Q.2d 1788, 1788-89 (B.P.A.I. 1986); *In Re King*, 801 F.2d 1324, 231 U.S.P.Q. (BNA) 136 (Fed. Cir. 1986); *MPEP* § 2107 (citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992) ("[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability....")). Failure of an examiner to meet this burden entitles an applicant to a patent. *Id.* ("[i]f examination at the initial stage does not produce a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent").

The MPEP indicates that in order for an examiner to establish a *prima facie* case of anticipation of an applicant's claim, the examiner must first interpret the claim,[3] and thereafter show that the cited prior art discloses the same elements, in the same arrangement, as the elements of the claim which the examiner asserts is anticipated. More specifically, the MPEP states that "[a] claim is anticipated *only if each and every element as set forth in the claim is found*, either expressly or inherently described, in a single prior art reference. . . . The identical invention must be shown in as complete detail as is contained in the . . . claim. . . . The elements must be arranged as required by the claim . . . ." *MPEP* § 2131 (emphasis added). Consequently, under the guidelines of the MPEP set forth above, if there is *any* substantial difference between the prior art cited by an examiner and an applicant's claim which the examiner asserts is rendered anticipated by the prior art, the prior art does NOT establish a *prima facie* case of anticipation and, barring other rejections, the applicant is entitled to a patent on such claim.

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[3] With respect to interpreting a claim at issue, the MPEP directs that, during examination -- as opposed to subsequent to issue -- such claim be interpreted as broadly as the claim terms would reasonably allow, in light of the specification, when read by one skilled in the art with which the claimed invention is most closely connected. *MPEP* § 2111.

2. MPEP Standards for Determining Obviousness

"[T]he examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness."[4] *MPEP* § 2142. The MPEP indicates that in order for an examiner to establish a *prima facie* case that an invention, as defined by a claim at issue, is obvious, the examiner must (1) interpret the claim at issue; (2) define one or more prior art reference components relevant to the claim at issue; (3) ascertain the differences between the one or more prior art reference components and the elements of the claim at issue; and (4) adduce objective evidence which establishes, under a preponderance of the evidence standard, a teaching to modify the teachings of the prior art reference components such that the prior art reference components can be used to construct a device substantially equivalent to the claim at issue. This last step generally encompasses two sub-steps: (1) adducement of objective evidence teaching how to modify the prior art components to achieve the individual elements of the claim at issue; and (2) adducement of objective evidence teaching how to combine the modified individual components such that the claim at issue, as a whole, is achieved. *MPEP* § 2141; *MPEP* § 2143. Each of these forgoing elements is further defined within the MPEP. *Id.*

This requirement has been explained recently by the Supreme Court in *KSR v. Teleflex, 550 U.S. _____; 127 S. Ct. 1727 (2007)* which noted that such a rejection requires "some articulated reasoning ... to support the legal conclusion of obviousness." As stated by the Court, obviousness can be established where "there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. To facilitate review, ***this analysis should be made explicit.***" (emphasis added). *See* In re Kahn, 441 F. 3d 977, 988 (CA Fed. 2006) ('[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.')." *KSR v. Teleflex, 550 U.S. _____; 127 S. Ct. 1727 at 1741.*

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[4] An invention, as embodied in the claims, is rendered obvious if an examiner concludes that although the claimed invention is not identically disclosed or described in a reference, the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. *MPEP* § 2141 (citing 35 U.S.C. § 103).

As further described by the Court ***"[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.*** Although common sense directs one to look with care at a patent application that claims as innovation the combination of two known devices according to their established functions, it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does. This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known." *KSR v. Teleflex, 550 U.S. _____; 127 S. Ct. 1727 at 1741.*

a) Interpreting a Claim at Issue

With respect to interpreting a claim at issue, the MPEP directs that, during examination -- as opposed to subsequent to issue -- such claim be interpreted as broadly as the claim terms would reasonably allow when read by one skilled in the art with which the claimed invention is most closely connected. In practice, this is achieved by giving each of the terms in the claim the "plain meaning" of the terms as such would be understood by those having ordinary skill in the art, and if portions of the claim have no "plain meaning" within the art, or are ambiguous as used in a claim, then the examiner is to consult the specification for clarification. *MPEP* § 2111.

b) Definition of One or More Prior Art Reference Components Relevant to the Claim at Issue

Once the claim at issue has been properly interpreted, the next step is the definition of one or more prior art reference components (*e.g.*, electrical, mechanical, or other components set forth in a prior art reference) relevant to the properly interpreted claim at issue. With respect to the definition of one or more prior art reference components relevant to the claim at issue, the MPEP defines three proper sources of such prior art reference components, with the further requirement that each such source must have been extant at the time of invention to be considered relevant. These three sources are as follows: patents as defined by 35 U.S.C. § 102, printed publications as defined by

35 U.S.C. § 102, and information (*e.g.*, scientific principles) deemed to be "well known in the art"[5] as defined under 35 U.S.C. § 102. *MPEP* § 2141; *MPEP* § 2144.

c) Ascertainment of Differences between Prior Art Reference Components and Claim at Issue; Teaching to Modify and/or Combine Prior Art Reference Components to Remedy Those Differences in Order to Achieve Recitations of Claim at Issue

With one or more prior art components so defined and drawn from the proper prior art sources, the differences between the one or more prior art reference components and the elements of the claim at issue are to be ascertained. Thereafter, in order to establish a case of *prima facie* obviousness, an examiner must set forth a rationale, supported by objective evidence[6] sufficient to demonstrate under a preponderance of the evidence standard, that in the prior art extant at the time of invention there was a teaching to modify and/or combine the one or more prior art reference components to construct a device practicably equivalent to the claim at issue.

The preferable evidence relied upon is an express teaching to modify/combine within the properly defined objectively verifiable sources of prior art. In the absence of such express teaching, an examiner may attempt to establish a rationale to support a finding of such teaching reasoned from, or based upon, express teachings taken from the defined proper sources of such evidence (*i.e.*, properly defined objectively verifiable sources of prior art). *MPEP* § 2144; *In re Dembiczak*, 50 U.S.P.Q.2d 1614 (Fed. Cir. 1999).

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[5] The fact that information deemed to be "well known in the art" can serve as a proper source of prior art reference components seems to open the door to subjectivity, but such is not the case. As a remedy to this potential problem, *MPEP* § 2144.03 states that if an examiner asserts that his position is derived from and/or is supported by a teaching or suggestion that is alleged to have been "well known in the art," and that if an applicant traverses such an assertion (that something was "well known within the art"), the examiner must cite a reference in support of his or her position. The same MPEP section also states that when a rejection is based on facts within the personal knowledge of an examiner, the data should be stated as specifically as possible, and the facts must be supported, when called for by the applicant, by an affidavit from the examiner. Such an affidavit is subject to contradiction or explanation by the affidavits of the applicant and other persons. *Id.* Thus, all sources of prior art reference components must be objectively verifiable.

[6] The proper sources of the objective evidence supporting the rationale are the defined proper sources of prior art reference components, discussed above, with the addition of factually similar legal precedent. *MPEP* § 2144.

The MPEP recognizes the pitfalls associated with the tendency to subconsciously use impermissible "hindsight" when an examiner attempts to establish such a rationale. The MPEP has set forth at least two rules to ensure against the likelihood of such impermissible use of hindsight. The first rule is that:

> under 35 U.S.C. 103, the examiner must step backward in time and into the shoes worn by the hypothetical "person of ordinary skill in the art" when the invention was unknown and just before it was made. In view of all factual information,[7] the examiner must then make a determination whether the claimed invention "as a whole" would have been obvious at that time to that person. Knowledge of an Applicant's disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the "differences," conduct the search, and evaluate the "subject matter as a whole" of the invention. The tendency to resort to "hindsight" based upon an Applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

MPEP § 2142 (emphasis added). Thus, if the only objective evidence of such teaching to modify and/or combine prior art reference components is an applicant's disclosure, no evidence of such teaching exists.[8]

The second rule is that if an examiner attempts to rely on some advantage or expected beneficial result that would have been produced by a modification and/or combination of the prior art reference components as evidence to support a rationale to establish such teachings to modify and/or combine prior art reference components, the MPEP requires that such advantage or expected beneficial result be objectively verifiable teachings present in the acceptable sources of prior art (or drawn from a convincing line of reasoning based on objectively verifiable established scientific principles or teachings). *MPEP* § 2144. Thus, as a guide to avoid the use of impermissible hindsight,

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[7] "Factual information" is information actually existing or occurring, as distinguished from mere supposition or opinion. *Black's Law Dictionary* 532 (5th ed. 1979).

[8] An applicant may argue that an examiner's conclusion of obviousness is based on improper hindsight reasoning. However, "[a]ny judgment on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning, but so long as it takes into account only knowledge which was within the level of ordinary skill in the art at the time the claimed invention was made and does not include knowledge gleaned only from applicant's disclosure, such a reconstruction is proper." *MPEP* § 2145(X)(A) (emphasis added).

these rules from the MPEP make clear that absent some objective evidence, sufficient to persuade under a preponderance of the evidence standard, no teaching of such modification and/or combination exists.[9]

B. Technical Material Cited by Examiner (Mulgund and Bennett and Madden I) Does Not Show or Suggest the Text of Claim 1 as Presented Herein; Notice of Allowance of Same Respectfully Requested

1. Claim 1

As amended, Claim 1 recites:

> 1. A method comprising:
>
> creating a plurality of first-administered content indexes for a first set of motes;
>
> aggregating the plurality of first-administered content indexes of the first set of motes into an aggregated content index using a gateway mote included within the first set of motes;

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[9] *In Re Sang Su Lee* 277 F.3d 1338 (Fed. Cir. 2002) ("When patentability turns on the question of obviousness, the search for and analysis of the prior art includes evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and combine the references relied on as evidence of obviousness.") *See, e.g., McGinley v. Franklin Sports, Inc.*, 262 F.3d 1339, 1351-52, 60 U.S.P.Q.2d 1001, 1008 (Fed. Cir. 2001) ("the central question is whether there is reason to combine [the] references," a question of fact drawing on the *Graham* factors). *"The factual inquiry whether to combine references must be thorough and searching." Id. It must be based on objective evidence of record. This precedent has been reinforced in myriad decisions, and cannot be dispensed with. See, e.g., Brown & Williamson Tobacco Corp. v. Philip Morris Inc.*, 229 F.3d 1120, 1124-25, 56 U.S.P.Q.2d 1456, 1459 (Fed. Cir. 2000) ("a showing of a suggestion, teaching, or motivation to combine the prior art references is an 'essential component of an obviousness holding'") (quoting *C.R. Bard, Inc., v. M3 Systems, Inc.*, 157 F.3d 1340, 1352, 48 U.S.P.Q.2d 1225, 1232 (Fed. Cir. 1998)); *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."); *In re Dance*, 160 F.3d 1339, 1343, 48 U.S.P.Q.2d 1635, 1637 (Fed. Cir. 1998) (there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the applicant); *In re Fine*, 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988) ("'teachings of references can be combined only if there is some suggestion or incentive to do so.'") (emphasis in original) (quoting *ACS Hosp. Sys., Inc. v. Montefiore Hosp.*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984)). The need for specificity pervades this authority. *See, e.g., In re Kotzab*, 217 F.3d 1365, 1371, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000) ("particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention, would have selected these components for combination in the manner claimed"); *In re Rouffet*, 149 F.3d 1350, 1359, 47 U.S.P.Q.2d 1453, 1457-58 (Fed. Cir. 1998) ("even when the level of skill in the art is high, the Board must identify specifically the principle, known to one of ordinary skill, that suggests the claimed combination. In other words, the Board must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.")).

creating one or more second-administered content indexes for a second set of motes;

obtaining at least a part of the second-administered content indexes of the second set of motes; and

creating a federated index from the aggregated content index aggregated by the gateway mote and at least a part of the one or more second-administered content indexes.

As shown in the following, the technical material cited by the Examiner does not show or suggest the text of Claim 1. Accordingly, Applicant respectfully requests that Examiner allow Claim 1 for the reasons set forth below.

a) Technical Material Cited by Examiner Does Not Show or Suggest the Text of Amended Claim 1.

As set forth above, Claim 1 recites:

1. A method comprising:

[a] creating a plurality of first-administered content indexes for a first set of motes;

[b] *aggregating the plurality of first-administered content indexes of the first set of motes into an aggregated content index using a gateway mote included within the first set of motes*;

[c] creating one or more second-administered content indexes for a second set of motes;

[d] obtaining at least a part of the second-administered content indexes of the second set of motes; and

[e] *creating a federated index from the aggregated content index aggregated by the gateway mote and at least a part of the one or more second-administered content indexes*. (emphasis added).[10]

With respect to claim 1, Examiner has stated,

"As to claim 1, Mulgund shows:

creating one or more first-administered content indexes for a first set of motes [building a database model by updating relational database logical design tables at each step of the discovering step, the model created comprised of an identity of each of the sensing nodes as well as any metadata about each node] (par. [0007], [0021]);

aggregating the plurality of first-administered content indexes of the first set of motes into an aggregated content index [retrieving the information stored at the node, the information including an identity of each of the sensing

[10] The lettering of the clauses herein is merely for sake of clarity of argument and should not be taken to imply any particular ordering of the clauses.

nodes as well as any meta data about each node (par. [0062]) wherein information is retrieved from a knowledge base (18) at a node (par. [0026] lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4)] (abstract, par. [0005]. [0025]);

creating one or more second-administered content indexes for a second set of motes [building a database model by updating relational database logical design tables at each step of the discovering step, the model created comprised of an identity of each of the sensing nodes as well as any metadata about each node of the set of nodes 2a the right side of Fig. 1] (par. [0007], [0021]);

obtaining at least a part of the one or more second-administered content indexes of the second set of motes [retrieving the information stored at the node, the information including an identity of each of the sensing nodes as well as any metadata about each node (par. [0062]) wherein information is retrieved from a knowledge base (18) at a node (par. [0026] lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4)).

Mulgund also shows creating a federated index from aggregated, content index and at least a part of the one or more second-administered content indexes Joint table containing metadata and identity of each sensing node] (abstract, par. [0005] and [0025], Fig. 3, Fig. 4) [Data Table List (30) that provides mapping between individual nodes and the names of the tables used to store those nodes' sensor data] (par. [0042], (Fig. 4).

Bennett also shows creating a federated index from the aggregated content index and at least a part of the one or more second-administered content indexes [creating a design document from a first and second tables, each table containing an index] (summary of the invention, Fig. 5A).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by creating a federated index from the aggregated content index and at least a part of the one or more second-administered content indexes, as taught by Bennett, in order to federate information from first and second indexes [tables containing metadata] into a relational database (abstract, in Bennett).

Mulgund in view of Bennett does not show that the aggregated index is aggregated using (by) a gateway mote included within the first set of motes.

Madden shows:

aggregating the plurality of first-administered content indexes of the first set of motes into an aggregated content index using a gateway mote included within the first administered set of motes [the mote at the root of the routing tree (the mote that interacts directly with the base station)] (Fig. 1; section 3.1 par. 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett by having the aggregated index being aggregated using (by) a gateway mote included within the first set of motes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach of Mulgund ("TAG: a Tiny Aggregation Service for Ad-Hoc Sensor

Networks" by Samuel Madden et al., section 4 under In-Network Aggregates)."

(Office Action mailed April 2, 2009, p. 6-9, section 8).

(1) Examiner Citations With Regard to Clause [b] of Independent Claim 1:

Applicant respectfully points out that Applicant has reviewed the portions of Mulgund identified by Examiner, and so far as Applicant can discern, Mulgund does not recite or suggest the text of clause [b] of Applicant's claim 1.

More specifically, the Examiner-cited portions of Mulgund recite:

> [0005] The tools needed to implement the vision of seamless, global access to remote information are available only in part, and not yet as an integrated package. The Applicants describe below the development of an information architecture, which is referred to in certain embodiments as Intelemetric™, and a method of using the architecture which make it possible to aggregate, store, process, and distributed, real-time distributed sensor data into the enterprise, and make resulting information readily available over the Internet.
>
> [0007] In another aspect, the present invention is a method of database modeling that makes it possible to create, store, and update a virtual model of a network of sensors within a relational database structure. The network modeling agent dynamically updates various sensor node data and link data that collectively define an instantaneous "state" of the sensor network into the database logical design. The network modeling agent thereby facilitates access, visualization, and the use of a stream of information generated by the network of distributed sensors. The sensor nodes to be interrogated by the network modeling agent are assumed to be uniquely addressable and in communication, using networking protocols, with one another through links and with a database server through one or more access points. A method according to the present invention comprises the steps of discovering and maintaining the distributed sensor network topology by applying at every access point a quasi-recursive algorithm, which causes the network modeling agent to visit a first sensor node and mark the first node visited, push the marked first node onto a stack, and while the stack is non-empty, query the node at the top of the stack for a list of current links to the node at the top, compare the list of current links to a list of historical links to the node at the top of the stack and update the historical link and historical node information, and if there are no unmarked nodes reachable from a current link then pop the stack, otherwise visit the next reachable unmarked node, mark the next node and push it onto the stack. The network modeling agent builds the database model by updating relational database logical design tables at each step of the discovering step. The agent maintains the database model by periodically

reapplying the interrogating algorithm, thereby updating the database model to account for sensor node and link additions and deletions. The periodicity of updates is preferably such that a near real-time topology of the sensor network is maintained.

[0021] an identity (unique identifying information such as a numeric address) of each of the sensing nodes 2 in the network 4, as well as any metadata about each node;

[0026] FIG. 2 illustrates the nature of each of the sensing nodes 2, which comprise computational devices (possibly ranging in complexity from small embedded platforms to a fully-fledged PCs) that have one or more sensors 16 providing high-value information connected to it. The term sensor is used here in a general sense. A sensor 16 as contemplated herein could be as simple as an instrument that measures temperature, pressure, or any such other physical quantity. It could also be a device as complex as a video camera providing continuous full-motion imagery of some area of interest. In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, but the output can be accessed from outside the network 4 through some software application programming interface (API) and hardware implementation. Each of the sensing nodes 2 is additionally in communication with one or more other sensing nodes through connecting links 3.

[0042] In another embodiment, the database logical design 19 further comprises a Data Table List 30 that provides a mapping between individual nodes 2 and the names of the tables used to store those nodes' Sensor Data. Each of these tables is defined and created dynamically, based on the structure of the information at each node. FIG. 4 illustrates an embodiment of a network model logical design 19 for a three-node network configuration wherein each of the three nodes (A, B, C) provides a different amount of data. As such a network is traversed and the Nodes Table 20 is populated, an entry is made in the Data Table List Table 30 that identifies the name of the table associated with a given node. In the example illustrated, each node (A, B, C) has its own Node Data Table (27A-C). Each of Node Data Table is defined to accommodate the type of sensor data known to originate from that node. As discussed earlier, it is assumed that the software agent on the database server can interrogate the node to determine what type of information it provides, and then define the table structures accordingly.

[0062] The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.

(Mulgund, par. [0005], [0007], [0021], [0026], [0042], and [0062]).

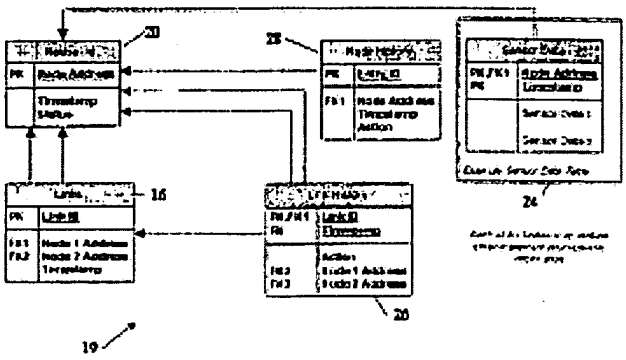


Figure 3

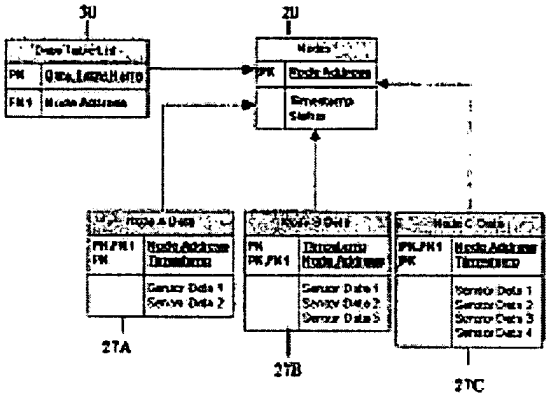


Figure 4

And the Examiner-cited portions of Bennett recite:

A system includes a relational database management system (RDBMS) having a data modeling component. A "data model" is a graphical representation of the relationship between tables one may use in a design document. "Design documents" allow a user to customize how his or her data are presented, including presenting information in formats which are not tabular and including formats which link together different tables (so that information stored in separate tables appears to the user to come from one place). Methods are described for automatically linking tables to be placed in a data model by comparing unique keys (e.g., primary key or other unique identifier) of one table with indexes (or indexable fields) of another table. Based upon the comparison, the system automatically suggests an appropriate link (if any) for the tables.

A system of the present invention includes a relational database management system (RDBMS), where information is maintained in one or

more database tables for easy, efficient storage and retrieval. In addition to database tables, the system provides "design documents" which allow a user to customize how his or her data are presented, including formats which are not tabular. Design documents can also link together different tables, so that information stored in separate tables appears to the user to come from one place.

(Bennett, Abstract and Summary of the Invention).

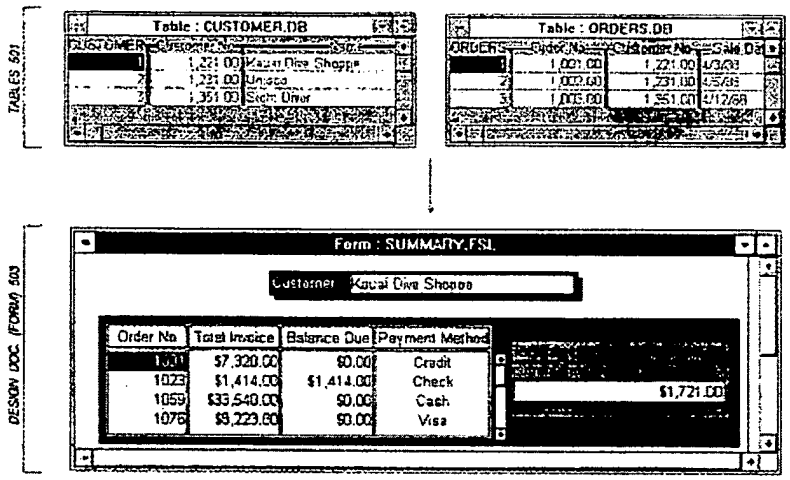
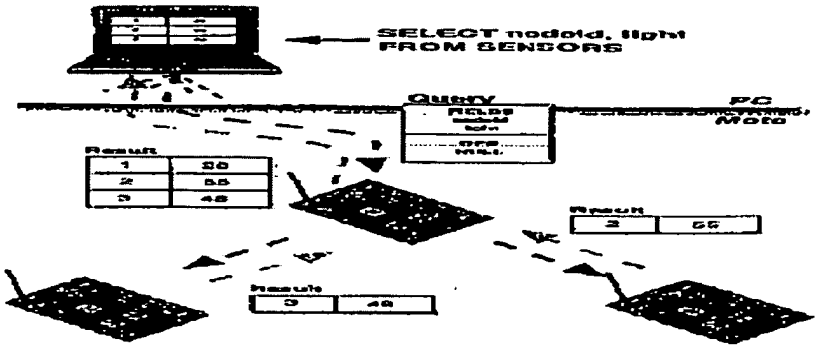


FIG. 5A

And the Examiner-cited portions of Madden I recite:



Madden I, Fig. 1

This statement provides a shared, local (i.e. single-node) location to store a streaming view of recent data similar to materialization points in other streaming systems like Aurora or STREAM [7, 39], or materialized views in conventional databases. Joins are allowed between two storage points on the same node, or between a storage point and the sensors

relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival. This is effectively a landmark query [19] common in streaming systems. Consider, as an example:

```
SELECT COUNT (*)
FROM sensors AS s, recent Light AS rl
WHERE rl.nodeid = s.nodeid
AND s.light < rl.light
```

Madden I, Section 3.1 paragraph 4

Applicant respectfully submits that, as can be seen from the foregoing, Mulgund does not show or suggest the recitations of clause [b] of claim 1. In relevant part, Mulgund teaches "The process of visiting a node involves retrieving the information stored at the node, and updating the local database." (Mulgund, par. [0062]). On the other hand, clause [b] recites "*aggregating the plurality of first-administered content indexes of the first set of motes into an aggregated content index using a gateway mote included within the first set of motes*" (emphasis added). Because Mulgund fails to teach or suggest clause [b] of claim 1, claim 1 is allowable over Mulgund.

In view of the foregoing, and under the MPEP standards as set forth above, Applicant respectfully submits that claim 1 is in condition for allowance.

(2) Examiner Citations With Regard to Clause [e] of Independent Claim 1:

Similarly, Applicant respectfully points out that Applicant has reviewed the portions of Mulgund, Bennett and Madden I identified by Examiner, and so far as Applicant can discern, neither Mulgund, Bennett or Madden I shows or suggests the text of clause [e] of Applicant's claim 1. Clause [e] recites "*creating a federated index from the aggregated content index aggregated by the gateway mote and at least a part of the one or more second-administered content indexes.*" (emphasis added).

Applicant respectfully submits that, as can be seen from the foregoing cited portions of Mulgund, Bennett and Madden I, neither Mulgund, Bennett nor Mulgund I shows or suggests the recitations of clause [e] of claim 1. In relevant part, Mulgund

teaches "The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database" (Mulgund, par. [0062]), while Bennett teaches "Design documents can also link together different tables, so that information stored in separate tables appears to the user to come from one place." (Bennett, Summary) and Madden I teaches "Joins are allowed between two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival". (Madden I, Section 3.1, paragraph 4)

On the other hand, clause [e] recites "*creating a federated index from the aggregated content index aggregated by the gateway mote and at least a part of the one or more second-administered content indexes.*" (emphasis added). Because neither Mulgund or Bennett shows or suggests the recitations of clause [e] of claim 1, claim 1 is in condition for allowance for this additional reason.

Applicant respectfully notes: "[W]hat a reference teaches is a question of fact." *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie,* 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Mulgund describes or teaches the text of Clause [a] of Independent Claim 1. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 1 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 1 and the Examiner-cited Mulgund. Bennett and Madden I reference are very different on their faces. *See supra* at p. 51-52 (quotation of Claim 1); at pp. 54–56 (quotation of Mulgund); at pp. 56-57 (quotation of Bennett); and at pp. 57-58 (quotation of Madden I). Insofar that Applicant has shown that *"at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure"* the Examiner-cited art is very

different from Claim 1, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not a establish a *prima facie* case of the unpatentability of Claim 1 either under the MPEP or under controlling legal standards. *See supra* at pp. 45-51.

Accordingly, insofar as that Mulgund, Bennett and Madden I do not recite the text of at least Clause [b] and [e] of Applicant's Independent Claim 1, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund, Bennett and Madden I could be modified/combined to teach at least Clauses [b] and [e] of Independent Claim 1, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not a establish a *prima facie* case of the unpatentability of Independent Claim 1 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 1 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund, Bennett, and Madden I, Applicant demonstrated above that the express recitations of Mulgund, Bennett, and Madden I are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund, Bennett, and Madden I "teaches." Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund, Bennett, and Madden I teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Mulgund were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund, Bennett, and Madden I to the actual express language of Applicant's Independent Claim 1. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 1 allowable and issue a Notice of Allowability of same.

2. Dependent Claims 2-107: Patentable for at Least Reasons of Dependency from Amended Claim 1.

Claims 2-107 depend either directly or indirectly from claim 1. "A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." *See* 35 U.S.C. § 112 paragraph 4. Consequently, claims 2-107 are patentable for at least the reasons why claim 1 is patentable. Accordingly, Applicant respectfully requests that Examiner hold dependent claims 2-107 patentable for at least the foregoing reasons, and issue a Notice of Allowance on same.

3. Dependent Claims 10, 13, 15, 17-18, 22, 24, 40-41, 49, 58, 61, 63, 65-66, 70, 72, 88-89, 97,: Patentable because of rejection based on improper 103(a) reference.

Claims 10, 13, 15, 17-18, 22, 24, 40-41, 49, 58, 61, 63, 65-66, 70, 72, 88-89, 97, which are dependent either directly or indirectly on claim 1, were rejected under 35 USC §103(a) as being unpatentable over Mulgund in view of Bennett, in view of Madden I and further in view of Kung (US 2005/0021724). (Emphasis added)

Section 103(a) of the patent statutes states "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this section, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *See* 35 U.S.C. § 103(a).

A review of the Kung reference shows that it was filed on June 18, 2004, which is after the filing date of the Applicants application (March 31, 2004). Although Kung claims the benefit of an earlier filed provisional application, applicant is unable to locate the portions of the Kung reference, which the office used in rejected the aforementioned claims, in the provisional application. Accordingly, applicant submits that Kung is an improper 102 reference and thus the office has presented an improper 103 rejection.

Accordingly, Applicant respectfully requests that Examiner hold dependent claims 10, 13, 15, 17-18, 22, 24, 40-41, 49, 58, 61, 63, 65-66, 70, 72, 88-89, 97 patentable for at least the foregoing reasons, and issue a Notice of Allowance on same.

4. New Dependent Claims 181-184: Patentable for at Least Reasons of Dependency from Independent Claim 1.

Applicant has added claims 181-184 and entry and consideration of this claim is respectfully requested. Claim 181-184 depends directly or indirectly from independent claim 1. "A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." *See* 35 U.S.C. §112 paragraph 4. Consequently, dependent claims 181-184 are patentable for at least the reasons why independent claim 1 is patentable. Accordingly, Applicant respectfully requests that Examiner hold new dependent claim 181-184 patentable for at least the foregoing reasons, and issue a Notice of Allowance on same.

C. Technical Material Cited by Examiner (Mulgund, Bennett and Madden 1) Does Not Show or Suggest the Text of Amended Claim 108 as Presented Herein; Notice of Allowance of Same Respectfully Requested

1. Amended Claim 108

As amended, Claim 108 recites:

> 108. A system comprising:
> means for creating a plurality of first-administered content indexes for a first set of motes;
> means for aggregating the plurality of first-administered content indexes of the first set of motes into an aggregated content index using a gateway mote included within the first set of motes;
> means for creating one or more second-administered content indexes for a second set of motes;
> means for obtaining at least a part of the second-administered content indexes of the second set of motes; and
> means for creating a federated index from the aggregated content index aggregated by the gateway mote and at least a part of the one or more second-administered content indexes, wherein at least one of the means for creating or the means for obtaining includes at least one of hardware, firmware, or a processor configured to perform particular functions including at least one of obtaining or creating.

As shown in the following, the technical material cited by the Examiner does not show or suggest the text of Claim 108. Accordingly, Applicant respectfully requests that Examiner allow Claim 108 for the reasons set forth below.

a) Technical Material Cited by Examiner Does Not Show or Suggest the Text of Amended Claim 108.

As set forth above, Claim 108 recites:

> 108. A system comprising:
> [a] means for creating a plurality of first-administered content indexes for a first set of motes;
> [b] *means for aggregating the plurality of first-administered content indexes of the first set of motes into an aggregated content index using a gateway mote included within the first set of motes*;
> [c] means for creating one or more second-administered content indexes for a second set of motes;
> [d] means for obtaining at least a part of the second-administered content indexes of the second set of motes; and
> [e] *means for creating a federated index from the aggregated content index aggregated by the gateway mote and at least a part of the one or more second-administered content indexes*, wherein at least one of the means for creating or the means for obtaining includes at least one of hardware, firmware, or a processor configured to perform particular functions including at least one of obtaining or creating. (emphasis added).

With respect to claim 108, Examiner has stated,

> "As to claim 108, Mulgund and, alternatively, Mulgund in view of Bennett shows all the elements, as discussed above with respect to claim 1." (Office Action mailed June 4, 2008, sec. 15, p. 42).

(1) Examiner Citations With Regard to Clause [b] of Independent Claim 108:

Applicant respectfully points out that Applicant has reviewed the portions of Mulgund identified by Examiner, and so far as Applicant can discern, Mulgund does not recite or suggest the text of clause [b] of Applicant's claim 108.

More specifically, the Examiner-cited portions of Mulgund recite:

[0005] The tools needed to implement the vision of seamless, global access to remote information are available only in part, and not yet as an integrated package. The Applicants describe below the development of an information architecture, which is referred to in certain embodiments as Intelemetric™, and a method of using the architecture which make it possible to aggregate, store, process, and distributed, real-time distributed sensor data into the enterprise, and make resulting information readily available over the Internet.

[0007] In another aspect, the present invention is a method of database modeling that makes it possible to create, store, and update a virtual model of a network of sensors within a relational database structure. The network modeling agent dynamically updates various sensor node data and link data that collectively define an instantaneous "state" of the sensor network into the database logical design. The network modeling agent thereby facilitates access, visualization, and the use of a stream of information generated by the network of distributed sensors. The sensor nodes to be interrogated by the network modeling agent are assumed to be uniquely addressable and in communication, using networking protocols, with one another through links and with a database server through one or more access points. A method according to the present invention comprises the steps of discovering and maintaining the distributed sensor network topology by applying at every access point a quasi-recursive algorithm, which causes the network modeling agent to visit a first sensor node and mark the first node visited, push the marked first node onto a stack, and while the stack is non-empty, query the node at the top of the stack for a list of current links to the node at the top, compare the list of current links to a list of historical links to the node at the top of the stack and update the historical link and historical node information, and if there are no unmarked nodes reachable from a current link then pop the stack, otherwise visit the next reachable unmarked node, mark the next node and push it onto the stack. The network modeling agent builds the database model by updating relational database logical design tables at each step of the discovering step. The agent maintains the database model by periodically reapplying the interrogating algorithm, thereby updating the database model to account for sensor node and link additions and deletions. The periodicity of updates is preferably such that a near real-time topology of the sensor network is maintained.

[0021] an identity (unique identifying information such as a numeric address) of each of the sensing nodes 2 in the network 4, as well as any metadata about each node;

[0026] FIG. 2 illustrates the nature of each of the sensing nodes 2, which comprise computational devices (possibly ranging in complexity from small embedded platforms to a fully-fledged PCs) that have one or more sensors 16 providing high-value information connected to it. The term sensor is used here in a general sense. A sensor 16 as contemplated herein could be as

simple as an instrument that measures temperature, pressure, or any such other physical quantity. It could also be a device as complex as a video camera providing continuous full-motion imagery of some area of interest. In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, but the output can be accessed from outside the network 4 through some software application programming interface (API) and hardware implementation. Each of the sensing nodes 2 is additionally in communication with one or more other sensing nodes through connecting links 3.

[0042] In another embodiment, the database logical design 19 further comprises a Data Table List 30 that provides a mapping between individual nodes 2 and the names of the tables used to store those nodes' Sensor Data. Each of these tables is defined and created dynamically, based on the structure of the information at each node. FIG. 4 illustrates an embodiment of a network model logical design 19 for a three-node network configuration wherein each of the three nodes (A, B, C) provides a different amount of data. As such a network is traversed and the Nodes Table 20 is populated, an entry is made in the Data Table List Table 30 that identifies the name of the table associated with a given node. In the example illustrated, each node (A, B, C) has its own Node Data Table (27A-C). Each of Node Data Table is defined to accommodate the type of sensor data known to originate from that node. As discussed earlier, it is assumed that the software agent on the database server can interrogate the node to determine what type of information it provides, and then define the table structures accordingly.

[0062] The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.
(Mulgund, par. [0005], [0007], [0021], [0026], [0042], and [0062]).

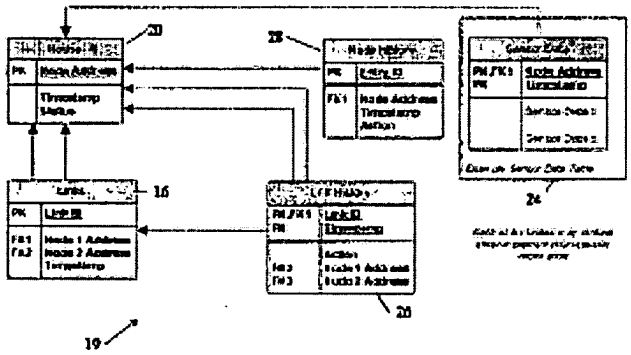


Figure 3

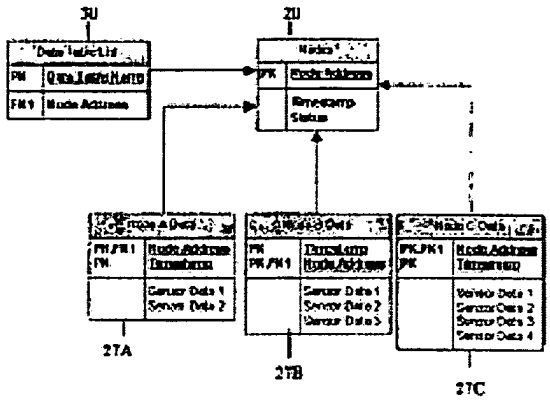


Figure 4

And the Examiner-cited portions of Bennett recite:

A system includes a relational database management system (RDBMS) having a data modeling component. A "data model" is a graphical representation of the relationship between tables one may use in a design document. "Design documents" allow a user to customize how his or her data are presented, including presenting information in formats which are not tabular and including formats which link together different tables (so that information stored in separate tables appears to the user to come from one place). Methods are described for automatically linking tables to be placed in a data model by comparing unique keys (e.g., primary key or other unique identifier) of one table with indexes (or indexable fields) of another table. Based upon the comparison, the system automatically suggests an appropriate link (if any) for the tables.

A system of the present invention includes a relational database management system (RDBMS), where information is maintained in one or more database tables for easy, efficient storage and retrieval. In addition to database tables, the system provides "design documents" which allow a user to customize how his or her data are presented, including formats which are not tabular. Design documents can also link together different tables, so that information stored in separate tables appears to the user to come from one place.

(Bennett, Abstract and Summary of the Invention).

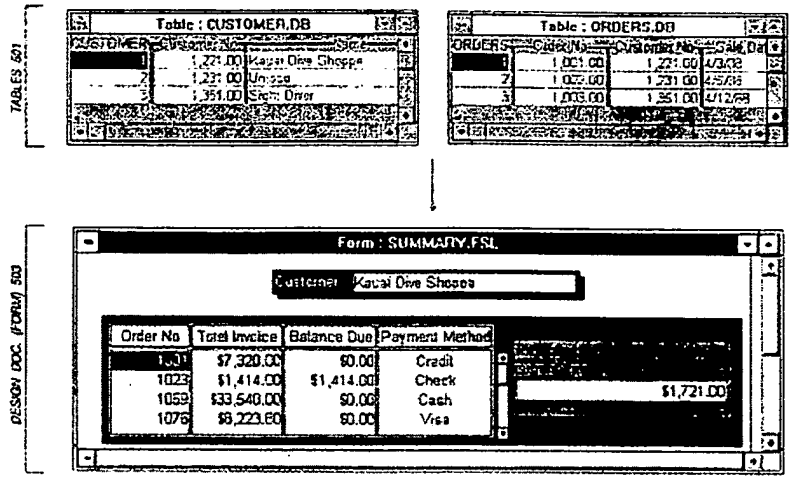
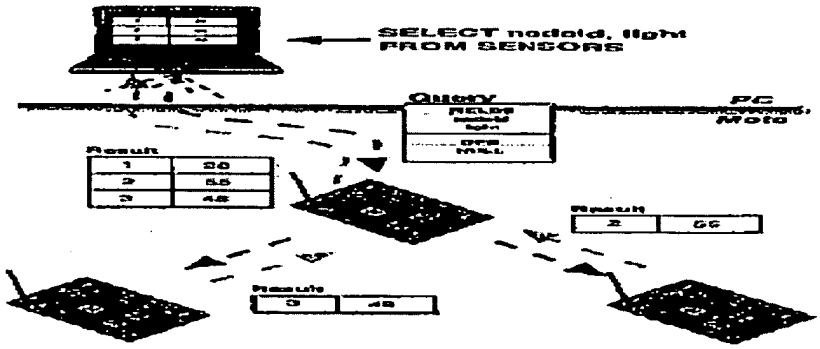


FIG. 5A

And the Examiner-cited portions of Madden I recite:



Madden I, Fig. 1

This statement provides a shared, local (i.e. single-node) location to store a streaming view of recent data similar to materialization points in other streaming systems like Aurora or STREAM [7, 39], or materialized views in conventional databases. Joins are allowed between two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival. This is effectively a landmark query [19] common in streaming systems. Consider, as an example:

SELECT COUNT (*)
FROM sensors AS s, recent Light AS rl
WHERE rl.nodeid = s.nodeid
AND s.light < rl.light

Madden 1, Section 3.1 paragraph 4

Applicant respectfully submits that, as can be seen from the foregoing, Mulgund does not show or suggest the recitations of clause [b] of claim 108. In relevant part, Mulgund teaches "The process of visiting a node involves retrieving the information stored at the node, and updating the local database." (Mulgund, par. [0062]). On the other hand, clause [b] recites "*means for aggregating the plurality of first-administered content indexes of the first set of motes into an aggregated content index using a gateway mote included within the first set of motes*" (emphasis added). Because Mulgund fails to teach or suggest clause [b] of claim 108, claim 108 is allowable over Mulgund.

In view of the foregoing, and under the MPEP standards as set forth above, Applicant respectfully submits that claim 108 is in condition for allowance.

(2) Examiner Citations With Regard to Clause [e] of Independent Claim 108:

Similarly, Applicant respectfully points out that Applicant has reviewed the portions of Mulgund, Bennett and Madden I identified by Examiner, and so far as Applicant can discern, neither Mulgund, Bennett nor Madden I shows or suggests the text of clause [e] of Applicant's claim 108. Clause [e] recites "*means for creating a federated index from the aggregated content index aggregated by the gateway mote and at least a part of the one or more second-administered content indexes.*" (emphasis added).

Applicant respectfully submits that, as can be seen from the foregoing cited portions of Mulgund, Bennett and Madden I, neither Mulgund, Bennett nor Mulgund I shows or suggests the recitations of clause [e] of claim 108. In relevant part, Mulgund teaches "The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database" (Mulgund, par. [0062]), while Bennett teaches "Design documents can also link together different tables, so that information stored in separate tables appears to the user to come from one place." (Bennett, Summary) and Madden I teaches "Joins are allowed between

two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival". (Madden I, Section 3.1, paragraph 4).

On the other hand, clause [e] recites "*means for creating a federated index from the aggregated content index aggregated by the gateway mote and at least a part of the one or more second-administered content indexes*." (emphasis added). Because neither Mulgund, Bennett nor Madden I shows or suggests the recitations of clause [e] of claim 108, claim 108 is in condition for allowance for this additional reason.

Applicant respectfully notes: "[W]hat a reference teaches is a question of fact." *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Mulgund describes or teaches the text of Clause [a] of Independent Claim 108. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 108 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 108 and the Examiner-cited Mulgund. Bennett and Madden I reference are very different on their faces. *See supra* at p. 62-63 (quotation of Claim 108); at pp. 64–66 (quotation of Mulgund); at pp. 66-67 (quotation of Bennett); and at p. 67 (quotation of Madden I). Insofar that Applicant has shown that *"at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure"* the Examiner-cited art is very different from Claim 108, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not a establish a *prima facie* case of the unpatentability of Claim 108 either under the MPEP or under controlling legal standards. *See supra* at pp. 45-51.

Accordingly, insofar as that Mulgund, Bennett and Madden I do not recite the text of at least Clause [b] and [e] of Applicant's Independent Claim 108, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund, Bennett and Madden I could be modified/combined to teach at least Clauses [b] and [e] of Independent Claim 108, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not a establish a *prima facie* case of the unpatentability of Independent Claim 108 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 108 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund, Bennett, and Madden I, Applicant demonstrated above that the express recitations of Mulgund, Bennett, and Madden I are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund, Bennett, and Madden I "teaches." Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund, Bennett, and Madden I teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Mulgund were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund, Bennett, and Madden I to the actual express language of Applicant's Independent Claim 108. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 108 allowable and issue a Notice of Allowability of same.

2. Dependent Claims 109-128: Patentable for at Least Reasons of Dependency from Amended Claim 108.

Claims 109-128 depend either directly or indirectly from claim 108. "A claim in dependent form shall be construed to incorporate by reference all the

limitations of the claim to which it refers." *See* 35 U.S.C. § 112 paragraph 4. Consequently, claims 109-128 are patentable for at least the reasons why claim 108 is patentable. Accordingly, Applicant respectfully requests that Examiner hold dependent claims 109-128 patentable for at least the foregoing reasons, and issue a Notice of Allowance on same.

3. Dependent Claims 113, and 118: Patentable because of rejection based on improper 103(a) reference.

Claims 113, and 118, which are dependent either directly or indirectly on claim 108, were rejected under 35 USC §103(a) as being unpatentable over Mulgund in view of Bennett, in view of Madden I and further in view of Kung (US 2005/0021724). (Emphasis added)

Section 103(a) of the patent statutes states "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this section, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *See* 35 U.S.C. § 103(a).

A review of the Kung reference shows that it was filed on June 18, 2004, which is after the filing date of the Applicants application (March 31, 2004). Although Kung claims the benefit of an earlier filed provisional application, applicant is unable to locate the portions of the Kung reference, which the office used in rejected the aforementioned claims, in the provisional application. Accordingly, applicant submits that Kung is an improper section 102 reference and thus the office has presented an improper section 103 rejection.

Accordingly, Applicant respectfully requests that Examiner hold dependent claims 113, and 118 patentable for at least the foregoing reasons, and issue a Notice of Allowance on same.

D. Technical Material Cited by Examiner (Mulgund, Bennett and Madden) Does Not Show or Suggest the Text of Amended Claim 129 as Presented Herein; Notice of Allowance of Same Respectfully Requested

1. Amended Claim 129

As amended, Claim 129 recites:

> 129. A method comprising:
> aggregating a plurality of first-administered content indexes from a first set of motes into an aggregated content index using an aggregating mote from among the first set of motes;
> obtaining at least a part of a second-administered content index from a second set of motes; and
> creating a federated index from the aggregated content index from the aggregating mote and at least a part of the second-administered content index.

As shown in the following, the technical material cited by the Examiner does not show or suggest the text of Claim 129. Accordingly, Applicant respectfully requests that Examiner allow Claim 129 for the reasons set forth below.

a) Technical Material Cited by Examiner Does Not Show or Suggest the Text of Amended Claim 129.

As set forth above, Claim 129 recites:

> 129. A method comprising:
> [a] *aggregating a plurality of first-administered content indexes from a first set of motes into* an aggregated content index using an aggregating mote from among the first set of motes;
> [b] obtaining at least a part of a second-administered content index from a second set of motes; and
> [c] creating a federated index from *the aggregated content index from the aggregating mote* and at least a part of the second-administered content index. (emphasis added).

With respect to claim 129, Examiner has stated,

> "As to claim 129, Mulgund shows:
> aggregating a plurality of first-administered content indexes of the first set of motes [the set of nodes 2 at the left side of Fig. 1] into an aggregated content index [retrieving the information stored at the node, the information including an identity of each of the sensing nodes as well as any metadata about each node (par. [0062]) wherein information is retrieved from a

knowledge base (18) at a node (par. [0026] lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4)] (abstract, par. [0005], [0025]):

obtaining at least a part of a second-administered content index of a second set of motes [the set of nodes 2 at the right side of Fig. 1: retrieving the information stored at the node, the information including an identity of each of the sensing nodes as well as any metadata about each node (par. [0062]) wherein information is retrieved from a knowledge base (18) at a node (par. [0026] lines 11-17) and used to form a relational database (Fig. 3 and Fig. 4)1-

Mulgund also shows creating a federated index from the aggregated content index and at least a part of the second-administered content index joint table containing metadata and identity of each sensing node] (abstract, paragraph [0005] and [0025], Fig. 3, Fig. 4) [Data Table List (30) that provides mapping between individual nodes and the names of the tables used to store those nodes' sensor data] (par. [0042], Fig. 4).

Bennett also shows creating a federated index from the aggregated content index and at least a part of the second-administered content index [creating a design document from a first and second tables, each table containing an index] (summary of the invention, Fig. 5A).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund by creating a federated index from the aggregated content index and at least a part of the second-administered content index, as taught by Bennett, in order to federate information from first and second indexes [tables containing metadata] into a relational database (abstract, in Bennett).

Mulgund in view of Bennett does not show that the aggregated index is aggregated using (by) an aggregating mote from among the first set of motes.

Madden shows:

aggregating a plurality of first-administered content indexes from a first set of motes into an aggregated content index using an aggregating mote from among the first set of motes [the mote at the root of the routing tree (the mote that interacts directly with the base station] (Fig. 1; section 3.1 par. 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Mulgund in view of Bennett by having the aggregated index being aggregated using (by) an aggregating mote from among the first set of motes in order to lower the number of message transmissions, latency, and power consumption than the server-based approach of Mulgund ("TAG: a Tiny Aggregation Service for Ad-Hoc Sensor Networks" by Samuel Madden et al., section 4 under In-Network Aggregates)." (Office Action mailed April 2, 2009, p. 31-33).

(1) Examiner Citations With Regard to Clause [a] of Independent Claim 129:

Applicant respectfully points out that Applicant has reviewed the portions of Mulgund identified by Examiner, and so far as Applicant can discern, Mulgund does not recite or suggest the text of clause [a] of Applicant's claim 129.

More specifically, the Examiner-cited portions of Mulgund recite:

> [Abstract] Method of and system for aggregating into a relational database model the state of an ad hoc network comprised of uniquely addressable distributed sensor nodes in communication using networking protocols with one another through links and to a database server through access points. A relational database logical design resident on the database server is dynamically updated with respect to the sensor network's current and historical topological information through the use of a traversal and interrogating network modeling agent. The distributed sensors nodes may be mobile, and may communicate by wired or wireless means through networking protocols such as the Internet.
>
> [0005] The tools needed to implement the vision of seamless, global access to remote information are available only in part, and not yet as an integrated package. The Applicants describe below the development of an information architecture, which is referred to in certain embodiments as Intelemetric™, and a method of using the architecture which make it possible to aggregate, store, process, and distributed, real-time distributed sensor data into the enterprise, and make resulting information readily available over the Internet.
>
> [0025] It is of no concern how this network topology came into being, how it is organized, what routing algorithms are used to pass messages from one node to the next, but rather, how to aggregate the information at each of the nodes into an off-network repository or network model database 12. The sensing nodes 2 may be mobile, and the interconnections may change over time. Furthermore, new nodes may join the network 4 at any time, and existing nodes may leave the network unexpectedly.
>
> [0026] FIG. 2 illustrates the nature of each of the sensing nodes 2, which comprise computational devices (possibly ranging in complexity from small embedded platforms to a fully-fledged PCs) that have one or more sensors 16 providing high-value information connected to it. The term sensor is used here in a general sense. A sensor 16 as contemplated herein could be as simple as an instrument that measures temperature, pressure, or any such other physical quantity. It could also be a device as complex as a video camera providing continuous full-motion imagery of some area of interest. In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, but the output can be accessed from outside the network 4 through some software application programming interface (API) and hardware implementation. Each of the sensing nodes 2 is additionally in communication with one or more other sensing nodes through connecting links 3.

[0042] In another embodiment, the database logical design 19 further comprises a Data Table List 30 that provides a mapping between individual nodes 2 and the names of the tables used to store those nodes' Sensor Data. Each of these tables is defined and created dynamically, based on the structure of the information at each node. FIG. 4 illustrates an embodiment of a network model logical design 19 for a three-node network configuration wherein each of the three nodes (A, B, C) provides a different amount of data. As such a network is traversed and the Nodes Table 20 is populated, an entry is made in the Data Table List Table 30 that identifies the name of the table associated with a given node. In the example illustrated, each node (A, B, C) has its own Node Data Table (27A-C). Each of Node Data Table is defined to accommodate the type of sensor data known to originate from that node. As discussed earlier, it is assumed that the software agent on the database server can interrogate the node to determine what type of information it provides, and then define the table structures accordingly.

[0062] The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database. (Mulgund, Abstract, par. [0005], [0025], [0026], [0042] and [0062]).

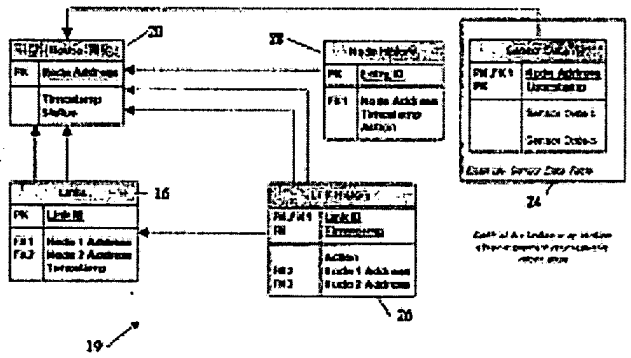


Figure 3

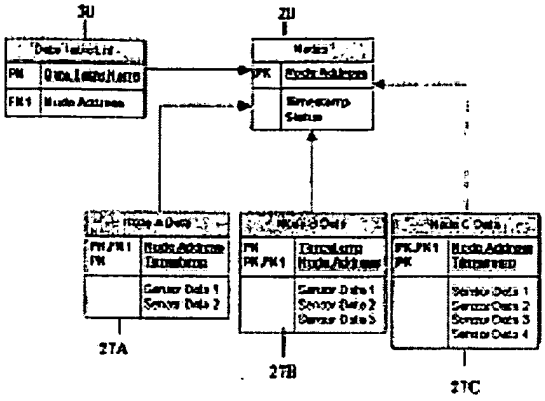


Figure 4

And the Examiner-cited portions of Bennett recite:

A system of the present invention includes a relational database management system (RDBMS), where information is maintained in one or more database tables for easy, efficient storage and retrieval. In addition to database tables, the system provides "design documents" which allow a user to customize how his or her data are presented, including formats which are not tabular. Design documents can also link together different tables, so that information stored in separate tables appears to the user to come from one place. (Bennett, Summary of the Invention).

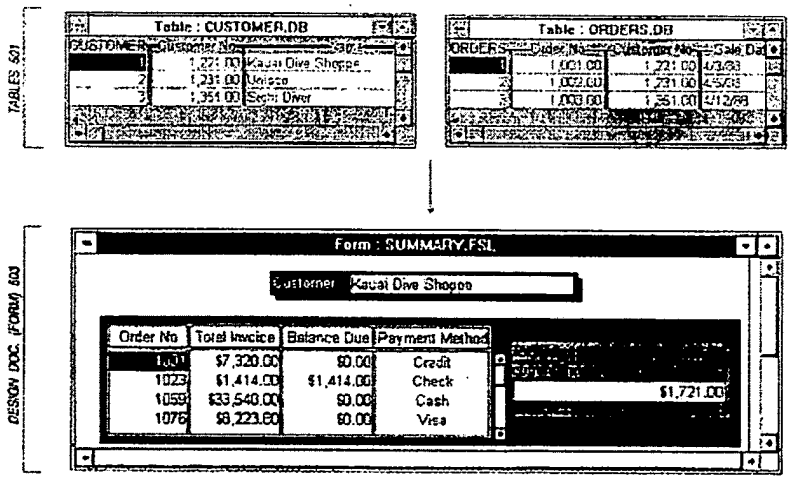
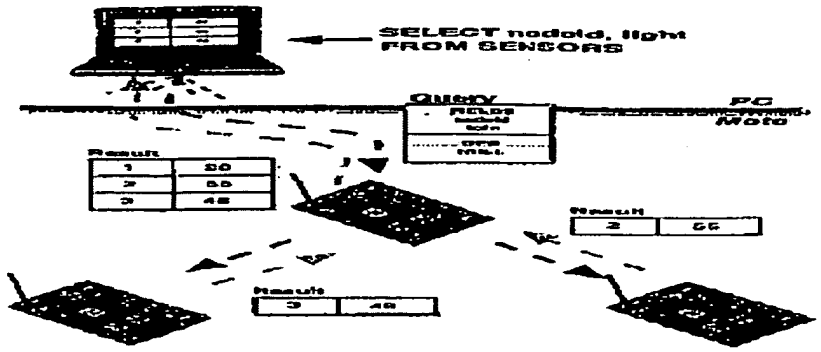


FIG. 5A

And the Examiner-cited portions of Madden I recite:



Madden I, Fig. 1

This statement provides a shared, local (i.e. single-node) location to store a streaming view of recent data similar to materialization points in other streaming systems like Aurora or STREAM [7, 39], or materialized views in conventional databases. Joins are allowed between two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival. This is effectively a landmark query [19] common in streaming systems. Consider, as an example:

SELECT COUNT (*)
FROM sensors AS s, recent Light AS rl
WHERE rl.nodeid = s.nodeid
AND s.light < rl.light

Madden 1, Section 3.1 paragraph 4

Applicant respectfully submits that, as can be seen from the foregoing, Mulgund does not show or suggest the recitations of clause [a] of claim 129. In relevant part, Mulgund teaches "The process of visiting a node involves retrieving the information stored at the node, and updating the local database." (Mulgund, par. [0062]). On the other hand, clause [a] recites "*aggregating a plurality of first-administered content indexes from a first set of motes into an aggregated content index using an aggregating mote from among the first set of motes*" (emphasis added). Because Mulgund fails to teach or suggest clause [a] of claim 129, claim 129 is allowable over Mulgund.

In view of the foregoing, and under the MPEP standards as set forth above, Applicant respectfully submits that claim 129 is in condition for allowance.

(2) Examiner Citations With Regard to Clause [c] of Independent Claim 129:

Similarly, Applicant respectfully points out that Applicant has reviewed the portions of Mulgund and Bennett identified by Examiner, and so far as Applicant can discern, neither Mulgund or Bennett shows or suggests the text of clause [c] of Applicant's claim 129. Clause [c] recites "creating a federated index from *the aggregated content index from the aggregating mote* and at least a part of the *second-administered content index*." (emphasis added).

Applicant respectfully submits that, as can be seen from the foregoing cited portions of Mulgund, Bennett and Madden I, neither Mulgund, Bennett nor Madden I shows or suggests the recitations of clause [c] of claim 129. In relevant part, Mulgund teaches "The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database" (Mulgund, par. [0062]), while Bennett teaches "Design documents can also link together different tables, so that information stored in separate tables appears to the user to come from one place." (Bennett, Summary) and Madden I teaches "Joins are allowed between two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival". (Madden I, Section 3.1, paragraph 4).

On the other hand, clause [c] recites "creating a federated index from *the aggregated content index from the aggregating mote* and at least a part of the second-*administered content index*." (emphasis added). Because neither Mulgund, Bennett nor Madden I shows or suggests the recitations of clause [c] of claim 129, claim 129 is in condition for allowance for this additional reason.

Applicant respectfully notes: "[W]hat a reference teaches is a question of fact." *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Mulgund describes or teaches the text of Clause [a] of Independent Claim 129. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 129 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 129 and the Examiner-cited Mulgund. Bennett and Madden I reference are very different on their faces. *See supra* at p. 72-72 (quotation of Claim 129); at pp. 74–76 (quotation of Mulgund); at pp. 76-76 (quotation of Bennett); and at p. 76 (quotation of Madden I). Insofar that Applicant has shown that *"at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure"* the Examiner-cited art is very different from Claim 129, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not a establish a *prima facie* case of the unpatentability of Claim 129 either under the MPEP or under controlling legal standards. *See supra* at pp. 45-51.

Accordingly, insofar as that Mulgund, Bennett and Madden I do not recite the text of at least Clause [a] and [c] of Applicant's Independent Claim 129, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund, Bennett and Madden I could be modified/combined to teach at least Clauses [a] and [c] of Independent Claim 129, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not a establish a *prima facie* case of the unpatentability of Independent Claim 129 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 129 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund, Bennett, and Madden I, Applicant demonstrated above that the express recitations of Mulgund, Bennett, and Madden I are not as Examiner alleges, and that Examiner has

provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund, Bennett, and Madden I "teaches." Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund, Bennett, and Madden I teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Mulgund were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund, Bennett, and Madden I to the actual express language of Applicant's Independent Claim 129. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 129 allowable and issue a Notice of Allowability of same.

2. Dependent Claims 130-153: Patentable for at Least Reasons of Dependency from Amended Claim 129.

Claims 130-153 depend either directly or indirectly from claim 129. "A claim in dependent form shall be construed to incorporate by reference all the limitations of the claim to which it refers." *See* 35 U.S.C. § 112 paragraph 4. Consequently, claims 130-153 are patentable for at least the reasons why claim 129 is patentable. Accordingly, Applicant respectfully requests that Examiner hold dependent claims 130-153 patentable for at least the foregoing reasons, and issue a Notice of Allowance on same.

3. Dependent Claims 132, 134, 136, 139, 141, and 143: Patentable because of rejection based on improper 103(a) reference.

Claims 132, 134, 136, 139, 141, and 143, which are dependent either directly or indirectly on claim 129, were rejected under 35 USC §103(a) as being unpatentable over Mulgund in view of Bennett, in view of Madden I and further in view of Kung (US 2005/0021724). (Emphasis added)

Section 103(a) of the patent statutes states "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this section, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *See* 35 U.S.C. § 103(a).

A review of the Kung reference shows that it was filed on June 18, 2004, which is after the filing date of the Applicants application (March 31, 2004). Although Kung claims the benefit of an earlier filed provisional application, applicant is unable to locate the portions of the Kung reference, which the office used in rejected the aforementioned claims, in the provisional application. Accordingly, applicant submits that Kung is an improper §102 reference and thus the office has presented an improper §103 rejection.

Accordingly, Applicant respectfully requests that Examiner hold dependent claims 132, 134, 136, 139, 141, and 143 patentable for at least the foregoing reasons, and issue a Notice of Allowance on same.

E. Technical Material Cited by Examiner (Mulgund and Bennett) Does Not Show or Suggest the Text of Amended Claim 154 as Presented Herein; Notice of Allowance of Same Respectfully Requested

1. Amended Claim 154

As amended, Claim 154 recites:

> 154. A system comprising:
> means for aggregating a plurality of a first-administered content index from a first set of motes into an aggregated content index using an aggregating mote from among the first set of motes;
> means for receiving at least a part of a second-administered content index from a second set of motes; and
> means for creating a federated index from the aggregated content index from the aggregating mote and at least a part of the second-administered content index, wherein at least one of hardware, firmware, or a processor configured to perform particular functions including at least one of obtaining or creating.

As shown in the following, the technical material cited by the Examiner does not show or suggest the text of Claim 154. Accordingly, Applicant respectfully requests that Examiner allow Claim 154 for the reasons set forth below.

a) Technical Material Cited by Examiner Does Not Show or Suggest the Text of Amended Claim 154.

As set forth above, Claim 154 recites:

> 154. A system comprising:
> [a] *means for aggregating a plurality of a first-administered content index from a first set of motes into an aggregated content index using an aggregating mote from among the first set of motes*;
> [b] means for receiving at least a part of a second-administered content index from a second set of motes; and
> [c] means for creating a federated index from *the aggregated content index from the aggregating mote* and at least a part of the *second-administered content index*, wherein at least one of the means for obtaining or the means for creating includes at least one of hardware, firmware, or a processor configured to perform particular functions including at least one of obtaining or creating. (emphasis added).

With respect to claim 154, Examiner has stated,

> "As to claim 154, Mulgund in view of Bennett shows all the elements, as discussed above with respect to claim 129."
> (Office Action mailed April 2, 2009, p. 35).

(1) Examiner Citations With Regard to Clause [a] of Independent Claim 154:

Applicant respectfully points out that Applicant has reviewed the portions of Mulgund identified by Examiner, and so far as Applicant can discern, Mulgund does not recite or suggest the text of clause [a] of Applicant's claim 154.

More specifically, the Examiner-cited portions of Mulgund recite:

> [Abstract] Method of and system for aggregating into a relational database model the state of an ad hoc network comprised of uniquely addressable distributed sensor nodes in communication using networking protocols with one another through links and to a database server through access points. A relational database logical design resident on the database server is dynamically updated with respect to the sensor network's current and historical topological information through the use of a traversal and interrogating network modeling agent. The distributed sensors nodes may be

mobile, and may communicate by wired or wireless means through networking protocols such as the Internet.

[0005] The tools needed to implement the vision of seamless, global access to remote information are available only in part, and not yet as an integrated package. The Applicants describe below the development of an information architecture, which is referred to in certain embodiments as Intelemetric™, and a method of using the architecture which make it possible to aggregate, store, process, and distributed, real-time distributed sensor data into the enterprise, and make resulting information readily available over the Internet.

[0025] It is of no concern how this network topology came into being, how it is organized, what routing algorithms are used to pass messages from one node to the next, but rather, how to aggregate the information at each of the nodes into an off-network repository or network model database 12. The sensing nodes 2 may be mobile, and the interconnections may change over time. Furthermore, new nodes may join the network 4 at any time, and existing nodes may leave the network unexpectedly.

[0026] FIG. 2 illustrates the nature of each of the sensing nodes 2, which comprise computational devices (possibly ranging in complexity from small embedded platforms to a fully-fledged PCs) that have one or more sensors 16 providing high-value information connected to it. The term sensor is used here in a general sense. A sensor 16 as contemplated herein could be as simple as an instrument that measures temperature, pressure, or any such other physical quantity. It could also be a device as complex as a video camera providing continuous full-motion imagery of some area of interest. In any case, the output of each of these sensors 16 is stored locally in a well-defined knowledge base 18, but the output can be accessed from outside the network 4 through some software application programming interface (API) and hardware implementation. Each of the sensing nodes 2 is additionally in communication with one or more other sensing nodes through connecting links 3.

[0042] In another embodiment, the database logical design 19 further comprises a Data Table List 30 that provides a mapping between individual nodes 2 and the names of the tables used to store those nodes' Sensor Data. Each of these tables is defined and created dynamically, based on the structure of the information at each node. FIG. 4 illustrates an embodiment of a network model logical design 19 for a three-node network configuration wherein each of the three nodes (A, B, C) provides a different amount of data. As such a network is traversed and the Nodes Table 20 is populated, an entry is made in the Data Table List Table 30 that identifies the name of the table associated with a given node. In the example illustrated, each node (A, B, C) has its own Node Data Table (27A-C). Each of Node Data Table is defined to accommodate the type of sensor data known to originate from that node. As discussed earlier, it is assumed that the software agent on the database server

can interrogate the node to determine what type of information it provides, and then define the table structures accordingly.

[0062] The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database. (Mulgund, par. [0026] and [0062]).

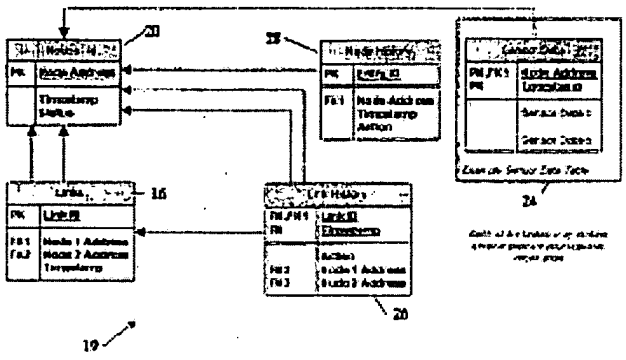


Figure 3

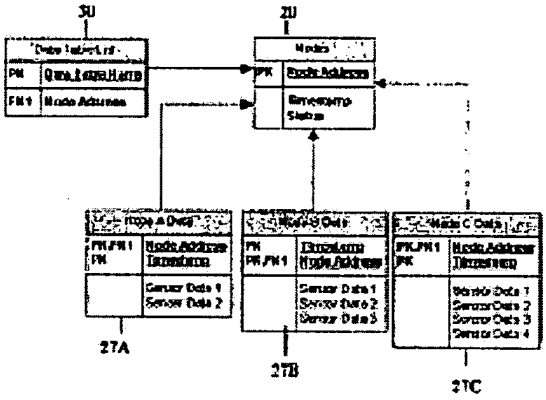


Figure 4

And the Examiner-cited portions of Bennett recite:

A system of the present invention includes a relational database management system (RDBMS), where information is maintained in one or more database tables for easy, efficient storage and retrieval. In addition to database tables, the system provides "design documents" which allow a user to customize how his or her data are presented, including formats which are not tabular. Design documents can also link together different tables, so that information stored in separate tables appears to the user to come from one place. (Bennett, Summary of the Invention).

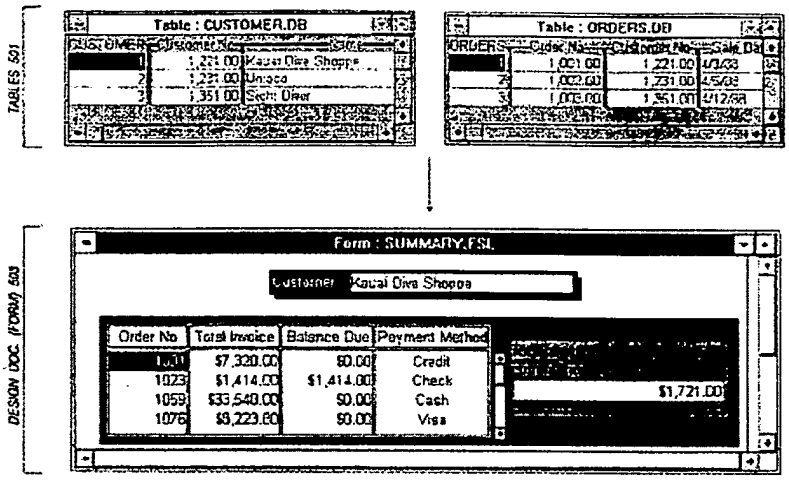
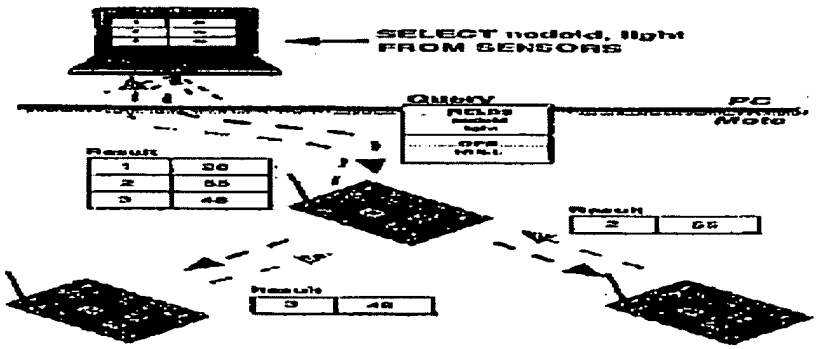


FIG. 5A

And the Examiner-cited portions of Madden I recite:



Madden I, Fig. 1

This statement provides a shared, local (i.e. single-node) location to store a streaming view of recent data similar to materialization points in other streaming systems like Aurora or STREAM [7, 39], or materialized views in conventional databases. Joins are allowed between two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival. This is effectively a landmark query [19] common in streaming systems. Consider, as an example:

SELECT COUNT (*)
FROM sensors AS s, recent Light AS rl
WHERE rl.nodeid = s.nodeid
AND s.light < rl.light

Madden 1, Section 3.1 paragraph 4

Applicant respectfully submits that, as can be seen from the foregoing, Mulgund does not show or suggest the recitations of clause [a] of claim 154. In relevant part, Mulgund teaches "The process of visiting a node involves retrieving the information stored at the node, and updating the local database." (Mulgund, par. [0062]). On the other hand, clause [a] recites "*means for aggregating a plurality of first-administered content indexes from a first set of motes into an aggregated content index using an aggregating mote from among the first set of motes*" (emphasis added). Because Mulgund fails to teach or suggest clause [a] of claim 154, claim 154 is allowable over Mulgund.

In view of the foregoing, and under the MPEP standards as set forth above, Applicant respectfully submits that claim 154 is in condition for allowance.

(2) Examiner Citations With Regard to Clause [c] of Independent Claim 154:

Similarly, Applicant respectfully points out that Applicant has reviewed the portions of Mulgund and Bennett identified by Examiner, and so far as Applicant can discern, neither Mulgund or Bennett shows or suggests the text of clause [c] of Applicant's claim 154. Clause [c] recites "means for creating a federated index from *the aggregated content index from the aggregating mote* and at least a part of the *second-administered content index.*" (emphasis added).

Applicant respectfully submits that, as can be seen from the foregoing cited portions of Mulgund, Bennett and Madden I, neither Mulgund, Bennett nor Madden I shows or suggests the recitations of clause [c] of claim 154. In relevant part, Mulgund teaches "The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database" (Mulgund, par. [0062]), while Bennett teaches "Design documents can also link together different tables, so that information stored in separate tables appears to the user to come from one place." (Bennett, Summary) and Madden I teaches "Joins are allowed between

two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival". (Madden I, Section 3.1, paragraph 4).

On the other hand, clause [c] recites "means for creating a federated index from *the aggregated content index from the aggregating mote* and at least a part of the second-*administered content index*." (emphasis added). Because neither Mulgund, Bennett nor Madden I shows or suggests the recitations of clause [c] of claim 154, claim 154 is in condition for allowance for this additional reason.

Applicant respectfully notes: "[W]hat a reference teaches is a question of fact." *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie,* 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Mulgund describes or teaches the text of Clause [a] of Independent Claim 154. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 154 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 154 and the Examiner-cited Mulgund. Bennett and Madden I reference are very different on their faces. *See supra* at p. 81-82 (quotation of Claim 154); at pp. 82–84 (quotation of Mulgund); at pp. 84 (quotation of Bennett); and at p. 85 (quotation of Madden I). Insofar that Applicant has shown that *"at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure"* the Examiner-cited art is very different from Claim 154, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not a establish a *prima facie* case of the unpatentability of Claim 154 either under the MPEP or under controlling legal standards. *See supra* at pp. 45-51.

Accordingly, insofar as that Mulgund, Bennett and Madden I do not recite the text of at least Clause [a] and [c] of Applicant's Independent Claim 154, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund, Bennett and Madden I could be modified/combined to teach at least Clauses [a] and [c] of Independent Claim 154, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not a establish a *prima facie* case of the unpatentability of Independent Claim 154 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 154 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund, Bennett, and Madden I, Applicant demonstrated above that the express recitations of Mulgund, Bennett, and Madden I are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund, Bennett, and Madden I "teaches." Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund, Bennett, and Madden I teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Mulgund were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund, Bennett, and Madden I to the actual express language of Applicant's Independent Claim 154. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 154 allowable and issue a Notice of Allowability of same.

2. Dependent Claims 155-178: Patentable for at Least Reasons of Dependency from Amended Claim 154.

Claims 155-178 depend either directly or indirectly from claim 154. "A claim in dependent form shall be construed to incorporate by reference all the

limitations of the claim to which it refers." *See* 35 U.S.C. § 112 paragraph 4. Consequently, claims 155-178 are patentable for at least the reasons why claim 154 is patentable. Accordingly, Applicant respectfully requests that Examiner hold dependent claims 155-178 patentable for at least the foregoing reasons, and issue a Notice of Allowance on same.

3. Dependent Claims 157, 159, 161, 164, 166, and 168: Patentable because of rejection based on improper 103(a) reference.

Claims 157, 159, 161, 164, 166, and 168, which are dependent either directly or indirectly on claim 154, were rejected under 35 USC §103(a) as being unpatentable over Mulgund in view of Bennett, in view of Madden I and further in view of Kung (US 2005/0021724). (Emphasis added)

Section 103(a) of the patent statutes states "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this section, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." *See* 35 U.S.C. § 103(a).

A review of the Kung reference shows that it was filed on June 18, 2004, which is after the filing date of the Applicants application (March 31, 2004). Although Kung claims the benefit of an earlier filed provisional application, applicant is unable to locate the portions of the Kung reference, which the office used in rejected the aforementioned claims, in the provisional application. Accordingly, applicant submits that Kung is an improper §102 reference and thus the office has presented an improper §103 rejection.

Accordingly, Applicant respectfully requests that Examiner hold dependent claims 157, 159, 161, 164, 166, and 168 patentable for at least the foregoing reasons, and issue a Notice of Allowance on same.

F. Technical Material Cited by Examiner (Mulgund) Does Not Show or Suggest the Text of Amended Claim 179 as Presented Herein; Notice of Allowance of Same Respectfully Requested

1. Amended Claim 179

As amended, Claim 179 recites:

> 179. A system comprising:
>
> at least one computational system having electrical circuitry and being operably coupled with a first-administered set of motes and a separately administered second-administered set of motes;
>
> at least one gateway mote included within at least one of the first-administered set of motes or the second-administered set of motes, the at least one gateway mote including a multi-mote index creation agent configured to
>
> receive a plurality of content indexes from a corresponding plurality of motes of the at least one of the first-administered set of motes or the second-administered set of motes, and
>
> aggregate the plurality of content indexes into at least one aggregated index associated with the at least one of the first-administered set of motes or the second-administered set of motes, respectively; and
>
> at least one federated index creation agent resident in the computational system, said at least one federated index creation agent configured to receive the at least one aggregated index associated with the at least one of the first-administered set of notes, and to create a federated index that includes the at least one aggregated index and an index from the separately administered second-administered set of motes.

As shown in the following, the technical material cited by the Examiner does not show or suggest the text of Claim 179. Accordingly, Applicant respectfully requests that Examiner allow Claim 179.

a) Technical Material Cited by Examiner Does Not Show or Suggest the Text of Amended Claim 179.

As set forth above, Claim 179 recites:

> 179. A system comprising:
>
> [a] at least one computational system having electrical circuitry and being operably coupled with a first-administered set of motes and a separately administered second-administered set of motes;

[b] *at least one gateway mote included within at least one of the first-administered set of motes or the second-administered set of motes, the at least one gateway mote including a multi-mote index creation agent configured to*

receive a plurality of content indexes from a corresponding plurality of motes of the at least one of the first-administered set of motes or the second-administered set of motes, and

aggregate the plurality of content indexes into at least one aggregated index associated with the at least one of the first-administered set of motes or the second-administered set of motes, respectively; and

[c] at least one federated index creation agent resident in the computational system, *said at least one federated index creation agent configured to receive the at least one aggregated index associated with the at least one of the first-administered set of notes, and to create a federated index that includes the at least one aggregated index and an index from the separately administered second-administered set of motes.* (emphasis added).

With respect to claim 179, Examiner has stated,

"As to claim 179, Madden shows:

at least one computational system having electrical circuitry and being operably coupled with a first-administered set of motes [a powered PC (the base station) (Fig. 1);

at least one gateway mote included within at least one of the first-administered set of motes or the second-administered set of motes [the mote at the root of the routing tree (the mote that interacts directly with the base station) (Fig. 1), the at least one gateway mote including a multi-mote index creation agent [a TinyDB, which is a distributed query processor that runs on each of the motes in a sensor network (section 1 Introduction, par. 4) configured to:

receive a plurality of content indexes from a corresponding plurality of motes of the at least one of the first-administered set of motes or the second-administered set of motes (Fig. 1; section 3.1 par. 3-4), and aggregate the plurality of content indexes into at least one aggregated index associated with the at least one of the first-administered set of motes or the second administered set of motes, respectively (Fig. 1; section 3.1 par. 4).

Madden further shows the computational system configured to receive the at least one aggregated index (Fig. 1).

However, Madden does not show at least one federated index creation agent resident in the computational system, said at least one federated index creation agent configured to receive the at least one aggregated index, and to create a federated index that includes the at least one aggregated index.

Mulgund shows:

at least computational system having electrical circuitry [database server (10)] and being operably coupled with a first-administered set of motes

[set of nodes 2 at the left side of Fig. 1] and a second-administered set of motes [set of nodes 2 at the right side of Fig. 1];

at least one gateway access point (6) (Fig. 1) included within at least one of the first-administered set of motes or the second-administered set of motes (Fig. 1); and

at least one federated index creation agent resident in the computational system [network modeling agent (14)] (Fig. 1). said at least one federated index creation agent configured to receive at least one index [retrieving the information stored at the node] (par. [0062]). and to create a federated index that includes the received index [Data Table List (30) that provides mapping between individual nodes and the names of the tables used to store those nodes' sensor data] (par. [0042]. Fig. 4).

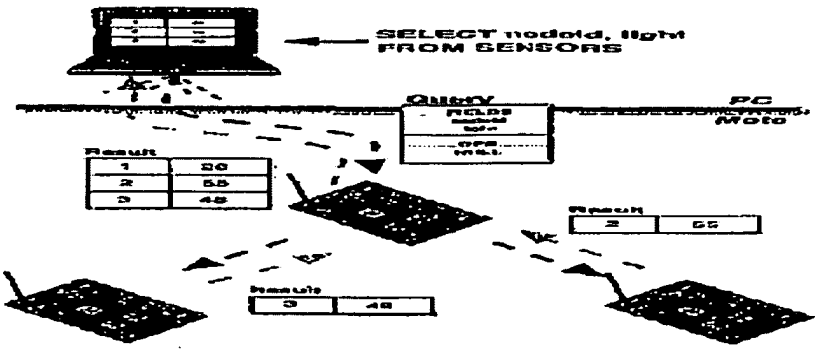
It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Madden by having at least one federated index creation agent resident in the computational system. said at least one federated index creation agent configured to receive the at least one aggregated index. and to create a federated index that includes the at least one aggregated index in order to aggregate the information at each of the nodes into an off-network repository or network model database (par. [0025] in Mulgund)."

Office Action mailed April 2, 2009 (pp. 64-65, sec. 16).

(1) Examiner Citations With Regard to Clause [b] of Independent Claim 179:

Applicant respectfully points out that Applicant has reviewed the portions of Madden I identified by Examiner, and so far as Applicant can discern, Madden does not recite or suggest the text of clause [b] of Applicant's claim 179.

More specifically, the Examiner-cited portions of Madden recites:



Madden I, Fig. 1

This statement provides a shared, local (i.e. single-node) location to store a streaming view of recent data similar to materialization points in other streaming systems like Aurora or STREAM [7, 39], or materialized views in conventional databases. Joins are allowed between two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival. This is effectively a landmark query [19] common in streaming systems. Consider, as an example:

SELECT COUNT (*)
FROM sensors AS s, recent Light AS rl
WHERE rl.nodeid = s.nodeid
AND s.light < rl.light

Madden 1, Section 3.1 paragraph 4

And the Examiner-cited portions of Mulgund recite:

[0025] It is of no concern how this network topology came into being, how it is organized, what routing algorithms are used to pass messages from one node to the next, but rather, how to aggregate the information at each of the nodes into an off-network repository or network model database 12. The sensing nodes 2 may be mobile, and the interconnections may change over time. Furthermore, new nodes may join the network 4 at any time, and existing nodes may leave the network unexpectedly.

[0042] In another embodiment, the database logical design 19 further comprises a Data Table List 30 that provides a mapping between individual nodes 2 and the names of the tables used to store those nodes' Sensor Data. Each of these tables is defined and created dynamically, based on the structure of the information at each node. FIG. 4 illustrates an embodiment of a network model logical design 19 for a three-node network configuration wherein each of the three nodes (A, B, C) provides a different amount of data. As such a network is traversed and the Nodes Table 20 is populated, an entry is made in the Data Table List Table 30 that identifies the name of the table associated with a given node. In the example illustrated, each node (A, B, C) has its own Node Data Table (27A-C). Each of Node Data Table is defined to accommodate the type of sensor data known to originate from that node. As discussed earlier, it is assumed that the software agent on the database server can interrogate the node to determine what type of information it provides, and then define the table structures accordingly.

[0062] The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database.

(Mulgund, par. [0026] and [0062]).

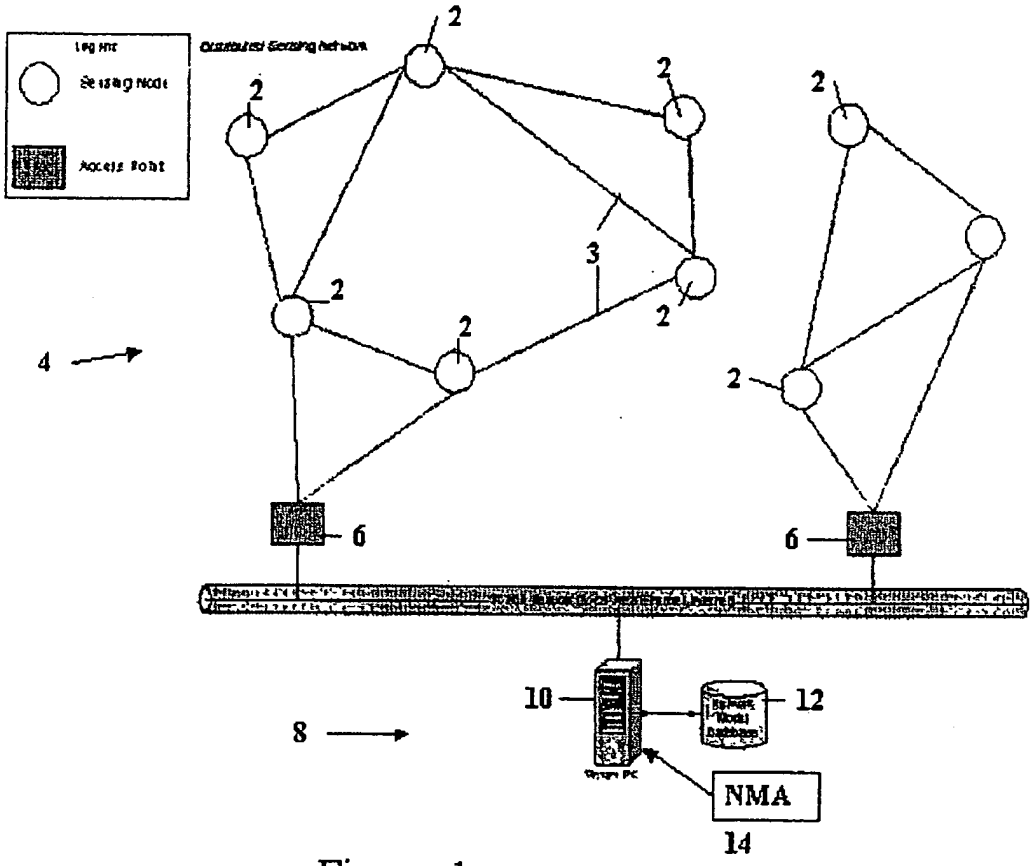


Figure 1

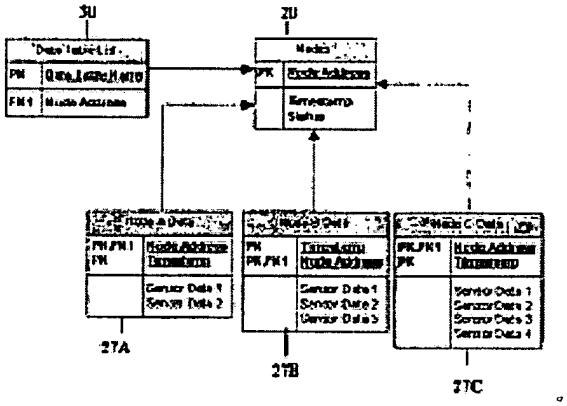


Figure 4

Mulgund Figs. 1 & 4

Applicant respectfully submits that, as can be seen from the foregoing, Madden 1 does not show or suggest the recitations of clause [b] of claim 179. In relevant part, Madden 1 teaches "Joins are allowed between two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival." (Madden, Section 3.1 paragraph 4). On the other hand, clause [b] recites "*at least one gateway mote included within at least one of the first-administered set of motes or the second-administered set of motes, the at least one gateway mote including a multi-mote index creation agent configured to receive a plurality of content indexes from a corresponding plurality of motes of the at least one of the first-administered set of motes or the second-administered set of motes, and aggregate the plurality of content indexes into at least one aggregated index associated with the at least one of the first-administered set of motes or the second-administered set of motes, respectively*;" (emphasis added). Because Madden I fails to teach or suggest clause [b] of claim 179, claim 179 is allowable over Madden I.

In view of the foregoing, and under the MPEP standards as set forth above, Applicant respectfully submits that claim 179 is in condition for allowance.

(2) Examiner Citations With Regard to Clause [c] of Independent Claim 179:

Similarly, Applicant respectfully points out that Applicant has reviewed the portions of Madden and Mulgund identified by Examiner, and so far as Applicant can discern, Madden and Mulgund do not recite or suggest the text of clause [c] of Applicant's claim 179. Clause [c] recites "at least one federated index creation agent resident in the computational system, said *at least one federated index creation agent configured to receive the at least one aggregated index associated with the at least one of the first-administered set of notes, and to create a federated index that includes the at least one aggregated index and an index from the separately administered second-administered set of motes*." (emphasis added).

Applicant respectfully submits that, as can be seen from the foregoing cited portions of Madden and Mulgund, neither Madden nor Mulgund shows or suggests

the recitations of clause [c] of claim 179. In relevant part, Madden I teaches "Joins are allowed between two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival", and Mulgund teaches "The traversal process begins at node A 32. Node A 32 is visited and pushed onto the stack. The process of visiting a node involves retrieving the information stored at the node, and updating the local database" (Mulgund, par. [0062])

On the other hand, clause [c] recites "at least one federated index creation agent resident in the computational system, said *at least one federated index creation agent configured to receive the at least one aggregated index associated with the at least one of the first-administered set of notes, and to create a federated index that includes the at least one aggregated index and an index from the separately administered second-administered set of motes.*" (emphasis added). Because neither Madden I nor Mulgund shows or suggests the recitations of clause [c] of claim 179, claim 179 is allowable over Madden I and Mulgund for this additional reason.

Applicant respectfully notes: "[W]hat a reference teaches is a question of fact." *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie,* 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Mulgund describes or teaches the text of Clause [a] of Independent Claim 179. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 179 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 179 and the Examiner-cited Mulgund and Madden I reference are very different on their faces. *See supra* at p. 90-91 (quotation of Claim 179); at pp. 93–94 (quotation of Mulgund); and at p. 92 (quotation of Madden I). Insofar that Applicant has shown that *"at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure"*

the Examiner-cited art is very different from Claim 179, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not a establish a *prima facie* case of the unpatentability of Claim 179 either under the MPEP or under controlling legal standards. *See supra* at pp. 45-51.

Accordingly, insofar as that Mulgund and Madden I do not recite the text of at least Clause [a] and [c] of Applicant's Independent Claim 179, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund and Madden I could be modified/combined to teach at least Clauses [a] and [c] of Independent Claim 179, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not a establish a *prima facie* case of the unpatentability of Independent Claim 179 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 179 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund and Madden I, Applicant demonstrated above that the express recitations of Mulgund and Madden I are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund, and Madden I "teaches." Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund, and Madden I teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Madden I were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund, and Madden I to the actual express language of Applicant's Independent Claim 179. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 179 allowable and issue a Notice of Allowability of same.

G. Technical Material Cited by Examiner (Mulgund) Does Not Show or Suggest the Text of Amended Claim 180 as Presented Herein; Notice of Allowance of Same Respectfully Requested

1. Amended Claim 180

As amended, Claim 180 recites:

> 180. A system comprising:
> at least one computational system having electrical circuitry and being operably coupled with a first-administered set of motes and a separately administered second-administered set of motes;
> at least one gateway mote included within at least one of the first-administered set of motes or the second-administered set of motes, the at least one gateway mote including a multi-mote index creation agent configured to
> receive a plurality of content indexes from a corresponding plurality of motes of the at least one of the first-administered set of motes or the second-administered set of motes, and
> aggregate the plurality of content indexes into at least one aggregated index associated with the first-administered set of motes and the separately administered second-administered set of motes, respectively; and
> at least one federated index resident in the computational system, said at least one at least one federated index configured to contain the at least one aggregated index.

As shown in the following, the technical material cited by the Examiner does not show or suggest the text of Claim 180. Accordingly, Applicant respectfully requests that Examiner allow Claim 180.

a) Technical Material Cited by Examiner Does Not Show or Suggest the Text of Amended Claim 180.

As set forth above, Claim 180 recites:

> 180. A system comprising:
> [a] at least one computational system having electrical circuitry and being operably coupled with a first-administered set of motes and a separately administered second-administered set of motes;
> [b] at least one gateway mote included within at least one of the first-administered set of motes or the second-administered set of motes, the at least one gateway mote including a multi-mote index creation agent configured to

[i] receive a plurality of content indexes from a corresponding plurality of motes of the at least one of the first-administered set of motes or the second-administered set of motes, and

[ii] *aggregate the plurality of content indexes into at least one aggregated index associated with the first-administered set of motes and the separately administered second-administered set of motes, respectively*; and

[c] at least one federated index resident in the computational system, *said at least one at least one federated index configured to contain the at least one aggregated index.* (emphasis added).

With respect to claim 180, Examiner has stated,

"As to claim 180, Madden shows:

at least one computational system having electrical circuitry and being operably coupled with a first-administered set of motes [a powered PC (the base station)] (Fig. 1);

at least one gateway mote included within at least one of the first-administered set of motes or the second-administered set of motes [the mote at the root of the routing tree (the mote that interacts directly with the base station] (Fig. 1), the at least one gateway mote including a multi-mote index creation agent [a TinyOS, which is a distributed query processor that runs on each of the motes in a sensor network (section 1 Introduction, par. 4) configured to:

receive a plurality of content indexes from a corresponding plurality of motes of the at least one of the first-administered set of motes or the second-administered set of motes (Fig. 1; section 3.1 par. 3-4), and

aggregate the plurality of content indexes into at least one aggregated index associated with the at least one of the first-administered set of motes or the second administered set of motes, respectively (Fig. 1; section 3.1 par. 4).

Madden further shows the computational system configured to receive the at least one aggregated index (Fig. 1).

However, Madden does not show at least one federated index resident in the computational system, said at least one federated index configured to contain the at least one aggregated index.

Mulgund shows: at least computational system having electrical circuitry [database server (10)) and being operably coupled with a first-administered set of motes [set of nodes 2 at the left side of Fig. 1] and a second-administered set of motes [set of nodes 2 at the right side of Fig. 1];

at least one gateway access point (6) (Fig. 1) included within at least one of the first-administered set of motes or the second-administered set of motes (Fig. 1); and

at least one federated index [Data Table List (30) that provides mapping between individual nodes and the names of the tables used to store those nodes' sensor data) (par. [0042), Fig. 4) resident in the computational

system, said at least one federated index configured to contain at least one received index (par. [0021]-[0024]).

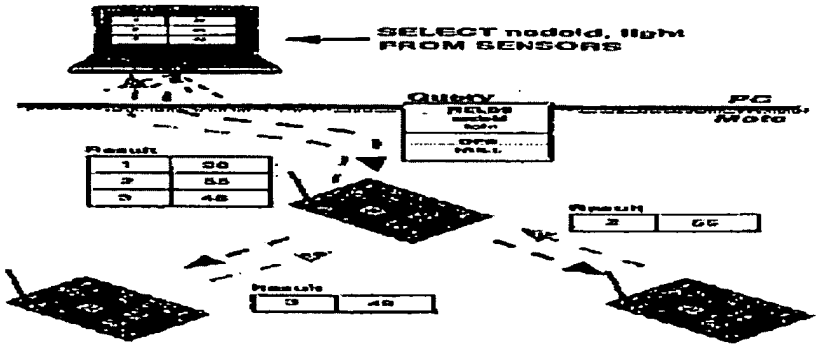
It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Madden by having at least one federated index resident in the computational system, said at least one federated index configured to contain the at least one aggregated index in order to aggregate the information at each of the nodes into an off-network repository or network model database (par. [0025] in Mulgund)."

Office Action mailed April 2, 2009, pp. 66-67, sec. 16).

(1) Examiner Citations With Regard to Clause [b][ii] of Independent Claim 180:

Applicant respectfully points out that Applicant has reviewed the portions of Madden I or Mulgund identified by Examiner, and so far as Applicant can discern, Madden I and Mulgund do not recite or suggest the text of clause [b][ii] of Applicant's claim 180.

More specifically, the Examiner-cited portions of Madden recites:



Madden I, Fig. 1

We have designed and implemented an ACQP engine. called TinyDB (for more information on TinyDB, see [35]), which is a distributed query processor that runs on each of the nodes in a sensor network. TinyDB runs on the Berkeley Mica mote platform. on top of the TinyOS [23] operating system. We chose this platform because the hardware is readily available from commercial sources [13] and the operating system is relatively mature. TinyDB has many of the features of a traditional query processor (e.g. the ability to select, join, project, and aggregate data), but, as we will discuss in this paper, also incorporates a number of other features designed to minimize power consumption via acquisitional techniques. These techniques. taken in aggregate, can lead to orders of magnitude improvement in power consumption and increased accuracy of query results over non-acquisitional systems that do not actively control when and where data is collected.

This query specifies that each sensor should report its own id, light, and temperature readings (contained in the virtual table sensors) once per second for 10 seconds. Results of this query stream to the root of the network in an online fashion, via the multi-hop topology, where they may be logged or output to the user. The output consists of a sequence of tuples, clustered into 1 s time intervals, Each tuple includes a time stamp corresponding to the time it was produced.

Note that the sensors table is (conceptually) an unbounded, continuous data stream of values; as is the case in other streaming and online systems, certain blocking operations (such as sort and symmetric join) are not allowed over such streams unless a bounded subset of the stream, or window. is specified. Windows in TinyDB are defined as fixed-size materialization points over the sensor streams. Such materialization points accumulate a small buffer of data that may be used in other queries. Consider, as an example:

```
CREATE STORAGE POINT recentlight SIZE 8
AS (SELECT nodeid, light ,FROM sensors
SAMPLE INTERVAL lOs)
```

This statement provides a shared, local (i.e. single-node) location to store a streaming view of recent data similar to materialization points in other streaming systems like Aurora or STREAM [7, 39], or materialized views in conventional databases. Joins are allowed between two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival. This is effectively a landmark query [19] common in streaming systems. Consider, as an example:

```
SELECT COUNT (*)
FROM sensors AS s, recent Light AS rl
WHERE rl.nodeid = s.nodeid
AND s.light < rl.light
```

Madden 1, Section 1 Introduction, par. 4, Section 3.1 paragraphs 3-4

The Examiner-cited portions of Mulgund recites:

> [0021] an identity (unique identifying information such as a numeric address) of each of the sensing nodes 2 in the network 4, as well as any metadata about each node;
>
> [0022] a connectivity of each of the sensing nodes 2; i.e., a structural representation of the network topology that could be used to reconstruct a diagram such as FIG. 1;
>
> [0023] an up-to-date information content at each of the sensing nodes 2; i.e., a real-time snapshot and time-history of the data of interest generated at each node location by an attached suite of sensors 16, as depicted in FIG. 2; and

[0024] a history of the network 4 from the moment the model was first constructed, which would allow a reconstruction of the network's state at any time in the past.

[0025] It is of no concern how this network topology came into being, how it is organized, what routing algorithms are used to pass messages from one node to the next, but rather, how to aggregate the information at each of the nodes into an off-network repository or network model database 12. The sensing nodes 2 may be mobile, and the interconnections may change over time. Furthermore, new nodes may join the network 4 at any time, and existing nodes may leave the network unexpectedly.

[0042] In another embodiment, the database logical design 19 further comprises a Data Table List 30 that provides a mapping between individual nodes 2 and the names of the tables used to store those nodes' Sensor Data. Each of these tables is defined and created dynamically, based on the structure of the information at each node. FIG. 4 illustrates an embodiment of a network model logical design 19 for a three-node network configuration wherein each of the three nodes (A, B, C) provides a different amount of data. As such a network is traversed and the Nodes Table 20 is populated, an entry is made in the Data Table List Table 30 that identifies the name of the table associated with a given node. In the example illustrated, each node (A, B, C) has its own Node Data Table (27A-C). Each of Node Data Table is defined to accommodate the type of sensor data known to originate from that node. As discussed earlier, it is assumed that the software agent on the database server can interrogate the node to determine what type of information it provides, and then define the table structures accordingly.

(Mulgund, par. [0021]-[0025] and [0042]).

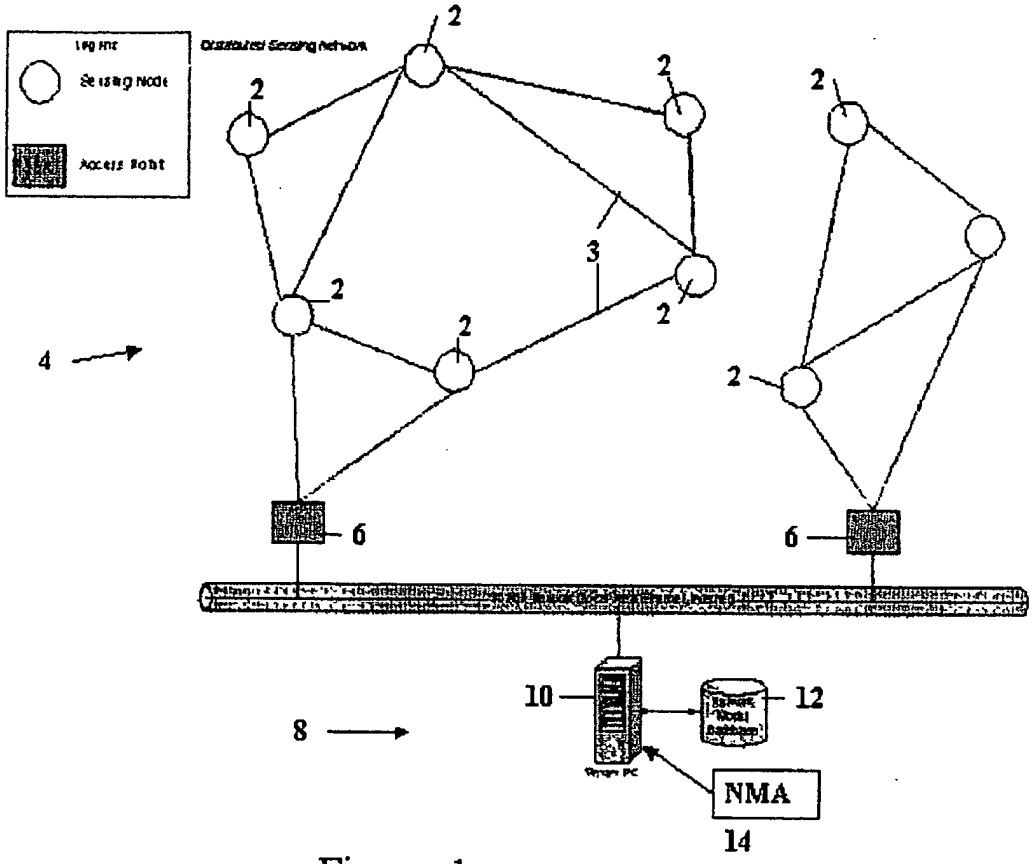


Figure 1

Mulgund Fig. 1

Applicant respectfully submits that, as can be seen from the foregoing, Madden I does not show or suggest the recitations of clause [b] [ii] of claim 180. In relevant part, Madden I teaches "Joins are allowed between two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival." (Madden, Section 3.1 Par. 4). On the other hand, clause [b] [ii] recites "*aggregate the plurality of content indexes into at least one aggregated index associated with the first-administered set of motes and the separately administered second-administered set of motes, respectively*" (emphasis added). Because Madden I fails to teach or suggest clause [b] [ii] of claim 180, claim 180 is allowable over Madden I.

In view of the foregoing, and under the MPEP standards as set forth above, Applicant respectfully submits that claim 180 is in condition for allowance.

(2) Examiner Citations With Regard to Clause [c] of Independent Claim 180:

Similarly, Applicant respectfully points out that Applicant has reviewed the portions of Madden and Mulgund identified by Examiner, and so far as Applicant can discern, Madden and Mulgund do not recite or suggest the text of clause [c] of Applicant's claim 180. Clause [c] recites "at least one federated index resident in the computational system, *said at least one at least one federated index configured to contain the at least one aggregated index.*" (emphasis added).

Applicant respectfully submits that, as can be seen from the foregoing cited portions of Madden and Mulgund, neither Madden nor Mulgund shows or suggests the recitations of clause [c] of claim 180. In relevant part, Madden I teaches "Joins are allowed between two storage points on the same node, or between a storage point and the sensors relation, in which case sensors is used as the outer relation in a nested loops join. That is, when a sensors tuple arrives, it is joined with tuples in the storage point at its time of arrival", and Mulgund teaches "As such a network is traversed and the Nodes Table 20 is populated, an entry is made in the Data Table List Table 30 that identifies the name of the table associated with a given node. In the example illustrated, each node (A, B, C) has its own Node Data Table (27A-C). Each of Node Data Table is defined to accommodate the type of sensor data known to originate from that node" (Mulgund, par. [0042])

On the other hand, clause [c] recites ""at least one federated index creation agent resident in the computational system, said *at least one federated index creation agent configured to receive the at least one aggregated index associated with the at least one of the first-administered set of notes, and to create a federated index that includes the at least one aggregated index and an index from the separately administered second-administered set of motes.*" (emphasis added). Because neither Madden I nor Mulgund shows or suggests the recitations of clause [c] of claim 180, claim 180 is allowable over Madden I and Mulgund for this additional reason.

Applicant respectfully notes: "[W]hat a reference teaches is a question of fact." *Amazon.com, Inc. v. Barnesandnoble.com, Inc.*, 239 F.3d 1343, 1358 (Fed. Cir. 2001) (referencing *In re Beattie*, 974 F.2d 1309, 1311 (Fed.Cir.1992)). See also *McGinley v. Franklin Sports*, 262 F.3d 1339, 1350 (Fed. Cir. 2001).

Applicant respectfully submits that there is NO PROFFERED EVIDENCE THAT WOULD SUPPORT A FINDING OF FACT that Mulgund describes or teaches the text of Clause [a] of Independent Claim 180. Under the guidelines from the *MPEP* and from the case law established by the Court of Appeals for the Federal Circuit, as set forth above, the cited art of record fails to suggest Independent Claim 180 for at least these reasons.

Applicant has shown by direct quotations that Independent Claim 180 and the Examiner-cited Mulgund and Madden I reference are very different on their faces. *See supra* at p. 98-99 (quotation of Claim 180); at pp. 101–103 (quotation of Mulgund); and at p. 100 (quotation of Madden I). Insofar that Applicant has shown that *"at first sight; on the first appearance; on the face of it; so far as can be judged from the first disclosure"* the Examiner-cited art is very different from Claim 180, and Applicant has noted that Examiner has not cited to any objectively verifiable evidence/argument based on same sufficient to remedy such *prima facie* differences, the Examiner-cited technical material does not a establish a *prima facie* case of the unpatentability of Claim 180 either under the MPEP or under controlling legal standards. *See supra* at pp. 45-51.

Accordingly, insofar as that Mulgund and Madden I do not recite the text of at least Clause [b][ii] and [c] of Applicant's Independent Claim 180, and insofar as that Examiner has provided no objectively verifiable evidence, or argument based on objectively verifiable evidence, as to how Mulgund and Madden I could be modified/combined to teach at least Clauses [b][ii] and [c] of Independent Claim 180, Applicant respectfully points out that under the MPEP guidelines as set forth above, the Examiner-cited technical material does not a establish a *prima facie* case of the unpatentability of Independent Claim 180 for at least these reasons. Thus, Applicant respectfully asks Examiner to hold Independent Claim 180 allowable and to issue a Notice of Allowability of same.

With respect to Examiner assertions regarding the teachings of Mulgund and Madden I, Applicant demonstrated above that the express recitations of Mulgund and Madden I are not as Examiner alleges, and that Examiner has provided no evidence—let alone the preponderance of the evidence required—to support Examiner assertions as to the factual conclusion as to what Mulgund, and Madden I "teaches." Accordingly, Applicant respectfully points out that in view of the foregoing, Examiner has presented no evidence that Mulgund, and Madden I teaches as asserted by Examiner. In addition, Applicant respectfully points out that even if Examiner's assertions regarding the teachings of Madden I were supported, such would be of no moment in that Examiner has yet to connect the alleged teaching of Mulgund, and Madden I to the actual express language of Applicant's Independent Claim 180. Under the MPEP guidelines as set forth above, the cited art of record fails to establish a *prima facie* case of unpatentability for at least these reasons. Accordingly, for at least the foregoing reasons, Applicant respectfully requests that Examiner hold Independent Claim 180 allowable and issue a Notice of Allowability of same.

VII. CONCLUSION

Applicant has during the course of prosecution amended one or more claims, and may in the future further amend or cancel claims. Applicant notes that any such cancellations and/or amendments will have transpired (i) prior to issuance and (ii) in the context of the rules that govern claim interpretation during prosecution before the United States Patent and Trademark Office (USPTO). Applicant notes that the rules that govern claim interpretation during prosecution form a radically different context than the rules that govern claim interpretation subsequent to a patent issuing. Accordingly, Applicant respectfully submits that any cancellations and/or amendments during the course of prosecution should be held to be tangential to and/or unrelated to patentability in the event that such cancellations and/or amendments are viewed in a post-issuance context under post-issuance claim interpretation rules.

Insofar as that the Applicant has during the course of prosecution amended claims sufficient to obtain a Notice of Allowability of all claims pending, Applicant may not have during the course of prosecution explicitly addressed all rejections and/or statements in Examiner's Office Actions. The fact that rejections and/or statements may not be explicitly addressed during the course of prosecution should NOT be taken as an admission of any sort, and Applicant hereby reserves any and all rights to contest such rejections and/or statements at a later time. Specifically, no waiver (legal, factual, or otherwise), implicit or explicit, is hereby intended (e.g., with respect to any facts of which Examiner took Official Notice, and/or for which Examiner has supplied no objective showing, Applicant hereby contests those facts and requests express documentary proof of such facts at such time at which such facts may become relevant). For example, although not expressly set forth during the course of prosecution, Applicant continues to assert all points of (e.g. caused by, resulting from, responsive to, etc.) any previous Office Action, and no waiver (legal, factual, or otherwise), implicit or explicit, is hereby intended. Specifically, insofar as that Applicant does not consider the cancelled/unamended claims to be unpatentable, Applicant hereby gives notice that it may intend to file and/or has filed a continuing application in order prosecute such cancelled/unamended claims.

With respect to any cancelled claims, such cancelled claims were and continue to be a part of the original and/or present patent application(s). Applicant hereby reserves all rights to present any cancelled claim or claims for examination at a later time in this or another application. Applicant hereby gives public notice that any cancelled claims are still to be considered as present in all related patent application(s) (e.g. the original and/or present patent application) for all appropriate purposes (e.g., written description and/or enablement). Applicant does NOT intend to dedicate the subject matter of any cancelled claims to the public.

The Examiner is invited to contact Steven Stewart at (206) 321-9072 or Dale R. Cook at (425) 467-2260 with any issues that may advance prosecution of the application on the merits.

Respectfully submitted,

_7/29/2009_____ /Steven C. Stewart/_____

Date

Steven Stewart
Registration No. 33,555